ARTISAN CONTRACT



Penthouses atop new \$1.5 million Camelback Villa, near Phoenix, Arizona, house blowers for exhaust type evaporative cooling system. This method of evaporative cooling is described on Page 73.

- · A service organization will handle all bookkeeping details for the busy contractor. Page
- · Employee wage records have become complex but a simplified procedure is outlined on Page 66.
- · Flexibility of warm air heating is demonstrated by an application to cargo planes. Page 86.
- · A chart for rapidly figuring the weight of steel plates is presented on Page 93.



Only AIR CONTROL Registers have Push Button Control!

IMAGINE! A REGISTER VALVE THAT OPERATES WITH A TOUCH OF THE FINGER—AS EASILY AS YOU TUNE YOUR PUSH BUTTON RADIO

No wonder everyone is insisting on AIR CONTROL'S No. 10 Air Conditioning Registers — for only these registers have four-way adjustable air control, plus, the new modern PUSH BUTTON Control. These attractive push buttons are not only better looking — they give easy, trouble-free operation. There's no complicated mechanism to get out of adjustment, only four moving parts — and you push to open or close (there's no pulling or tugging to loosen screws and pull the register off the wall).



AIR CONTROL'S AIR FLOW VALVE GIVES BETTER PERFORMANCE

LESS RESISTANCE. Note the curved contour of the valve louvers — they control the air with a minimum of resistance. Note how the valve sets into the duct just the right distance to pick up the air stream so that you have as much air flow thru the bottom as the top. It works equally well in any stackhead; round, square or bevelled — and is also ideal for straight-in ducts. An adjusting screw (just below the push buttons) can be set to assure you that the valve will always open to the desired up or down deflection.

There's nothing finer than AiR CONTROL'S No. 10 Series Air Conditioning Registers
— for beauty, proper air distribution and ease of operation — with PUSH BUTTON
Control!

See your Air Control Jobber or write for Catalog 48 showing the complete line of -

AIR CONTROL Air Conditioning Registers and Grilles • Gravity Registers • Floor Registers and Faces • Ventilators also LEIGH Building Products.

More Cleaned Air Per Filter

Because - a Wilson Hair Filter cleans without clogging!

Wilson Hair Filters utilize their full-filter-depth to trap and hold the maximum dust and dirt. It's the Wilson-Way of multi-directional distribution of hair in the filter that makes this possible. THERE ARE NO LAYERS.

The texture of the hair filter unit is absolutely uniform throughout its entire thickness. The hair itself is crossed and crisscrossed, in and out, up and down, back and forth every which way. With this arrangement, the hair literally invites all dust and dirt to come in, spread around, and be trapped throughout the entire filter interior. That is why—

- (a) Wilson Hair Filters trap and hold more dust.
- (b) Dust does not build up on the inlet surface to block free air-flow and shorten filter life.
- (c) Wilson Hair Filters give more cleaned air per filter and longer service at lower replacement expense.

The Wilson-Way of full-depth-dust-trapping is only one of the many exclusive features that make a Wilson Hair Filter the superior air filter.



REMEMBER – <u>Both</u> are HAIR FILTERS

The famous "Edgeseal," the original Hair Filter with the patented "self-sealing" edge.

The popular "Honeycomb," the new, dressed-up, encased Hair Filter.

Both do the thorough job of filtering air that only *Natural Hair*, scientifically processed the Wilson-Way, can do.

Save Delay—Save Dollars—Save Doubt
Send for FREE sample with details and prices.

Wilson Hair Filters are another quality product of Wilson & Co., Inc.— (World famous for outstanding quality in Meat Foods, Sporting Goods, Pharmaceuticals, Hair Products, etc.)

Wilson & Co., Inc. (Air Filter Division) 4100 S. Ashland Ave., Chicago, III.





WILSON'S HAIR FILTER



AMERICAN ARICAN



Member—Audit Bureau of Circulations

Member—Associated Business Papers



READJUSTMENT—NOT DEPRESSION		61
How Good Is This Congress?		62
An Outside Bookkeeping Service		64
SIMPLIFIED WAGE RECORDS		66
How to Figure the Advertising Budget		68
How Much Is Today's Dollar Worth?		69
News Summary of the Month		71

RESIDENTIAL AIR CONDITIONING SECTION

Evaporative Cooling by Exhaust Syste	M				75
TEST RESULTS OF BLOWER AIR DELIVERY	T	HR	ouc	н	
EVAPORATIVE COOLER		*			78
ELECTRONIC CONTROL SYSTEMS (II) .					80
Air Conditioning in a Packing Plant			,		83
CARGO PLANES HEATED BY WARM AIR	*				86

SHEET METAL SECTION

SCIENTIFIC SHOP LAYOUT (IX)	89
CHART GIVES WEIGHT OF STEEL PLATE	93
NEUBECKER—THREE BRANCH CONNECTION	94
APPLICATIONS OF PRODUCTION DIES TO PRESS BRAKE	
Work	96
LIBRARY REQUIRES HUGE VENTILATING FANS	98

DEPARTMENTS

The Editor's Notebook	RIMENIS										
Convention Reports— Oil Heat Institute Sets New Sales Goals . 102 Equipment Developments	THE EDITOR'S NOTEBOOK				*				*		6
OIL HEAT INSTITUTE SETS NEW SALES GOALS	Association Activities								*	*	101
New Literature		rs N	JEV	v SA	ALE	s G	OAI	LS			102
WITH THE CONTRACTORS	EQUIPMENT DEVELOPMEN	TS							*		106
Obituaries	NEW LITERATURE										134
	WITH THE CONTRACTORS		*		*						142
INDUSTRY ITEMS	OBITUARIES										144
	INDUSTRY ITEMS										150

RESIDENTIAL AIR CONDITIONING

WARM AIR HEATING

SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

EDITOR

JOHN E. PETERSON

ASSOCIATE EDITOR JOHN McCullough

ADVERTISING STAFF

WALLACE J. OSBORN New York City MUrray Hill 9-8293 ROBERT A. JACK

Cleveland
YEllowstone 1540
JAMES D. THOMAS

George C. Cutler Chicago STate 2-6916 R. PAYNE WETTSTEIN

Los Angeles—DUnkirk 8-2286 San Francisco—YUkon 6-2522 Portland—ATwater 4107

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago 2, Ill., U.S.A. Copyright 1949 by Keeney Publishing Company.

Publisher—Frank P. Keeney
Manager—Charles E. Price
Production Manager—L. A. Doyle

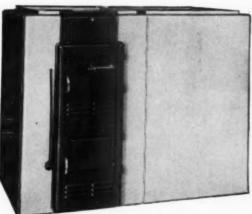
Yearly Subscription Price—U.S. and possessions, \$3.00; Canada, Cuba, Mexico, South America, Central America, \$4.00; Others, \$6.00. Single copies, U.S. and possessions, \$.35. Back numbers, \$.60. January, 1949, Directory Issue, \$1.50 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the Act of March 3, 1879. Additional entry at Milwaukee, Wisconsin.

Founded 1880

JULY, 1949

Volume 118, No. 7





GFB GAS FIRED UNIT

A complete range from 75,000 to 240,000 BTU. All heat exchangers built of heavy 10 gauge corrosion resisting steel. "COUNTER-FLOW" principle as used in all Syncromatic Furnace Units.



Syncromatic COUNTER FLOW

made that can be converted to high efficiency oil firing.

COUNTER FLOW

PRINCIPLE MEANS PERFECTION IN HEATING EFFICIENCY

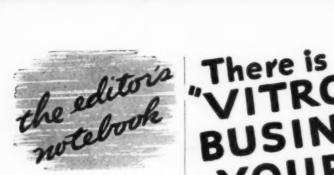


The Syncromatic Oil Fired Unit employs the "COUNTER-FLOW" principle in warm air heating . . . one of the most efficient methods of heat transfer known. Compact and completely welded heavy gauge heat exchanger . . . your best insurance for safety and long life. Just compare the gauge and construction of Syncromatic with any other oil-fired unit.





Syrcromatic Corporation
WATERTOWN, WISCONSIN



Polston's Pattern

Is A. C. Polston who developed the reverse elbow (AMER-ICAN ARTISAN, May 1948) an instructor in sheet metal work?

. . . has he written a book on short methods of sheet metal layout?

. . . short methods like the one published are of great value to sheet metal workers, and I would like to see more of them in future issues.

THOMAS J. AUSTIN SMWIA, Local No. 44 Wilkes Barre, Penn.

- (1) Yes.
- (2) No.
- (3) Thanks for your comment and suggestion. We realize the value of short methods of pattern development and will attempt to obtain them .-ED.

Sales Jump 150 Per Cent

It all started with a one inch display ad in a daily newspaper in San Bernardino, when Ed Heil wrote this copy: "Mable, Why Did You Leave Me? Please Come Home. I Promise to Be Good to You. Harry.

Five days later, Heil's business was booming.

The evening Heil, who operates Ed Heil's Appliance Shop, wrote that copy, he was hunting for shrimp in a shrimp cocktail, and subconsciously was weighing the results of his newspaper advertising. Up to this time his advertising had consisted of the standard, squeezed-up type blurbs that attracted little or no attention.

What to do? Create some fictional characters, have them conflict, and Ed Heil would ride to the rescue. He decided to do all this through the well-

TROLINER" BUSINESS IN YOUR CITY!

ATTENTION Sheet Metal Men

There is a steady demand for VITROLINER CHIMNEY LINERS in every city of the U. S. and Canada. Every home is a prospect. especially where oil or gas is used in the heating plant. If your organization is aggressive and reliable, you can establish a profitable year 'round business in your community.

Our Distributors can supply VITROLINER in quantity quickly and efficiently. We show you how to build a money making business—how to cash in on the tremendous demand for quality VITROLINER CHIMNEY LINERS.



ELIMINATES FIRE HAZARDS

CREATES BETTER DRAFT

REDUCES FUEL CONSUMPTION

PREVENTS CONDENSATION DAMAGE

ASSURES LONGER LIFE

VITROLINER, a pioneer product, protects and preserves the chimney from the harmful and destructive properties of combustion. Manufactured from heavygauge iron, coated with acidresisting vitreous enamel.

The actual installation is easy and takes only a few hours for experienced sheet metal men.

Recommended by many leading gas companies, coal and oil burning equipment manufacturers.

- . ECONOMICAL
- . DURABLE AND PRACTICAL . UNDERWRITERS' APPROVED
- FOR FURTHER INFORMATION WRITE TO CONDENSATION ENGINEERING

CORPORATION 122 SO. MICHIGAN AVE. CHICAGO 3,1LL



read block advertising space on the first page of section two where local merchants broadcast announcements and "hot" specials.

The first ad hit the reader right between the eyes. Everybody loves somebody else's domestic squabbles. The local newspaper office had a small flood of calls from interested readers. Strict silence concerning the sponsor was kept.

A day later, appeared ad number two: "You Would Never Buy Me Anything I Wanted. Mabel.

Suggestions for peace-offering gifts from newspaper readers ran wild. The next day appeared ad number three: "Mable, If You Will Come Back I'll Get You Anything You Want. Harry.'

Now here was clearly a man who wanted his wife back. Heil had originally planned to drag this sort of thing out to quite a length before inserting the "punch line." However, public pressure was beginning to tie up the newspaper telephones to an extent not foreseen. The "punch line" took shape in the next edition. "Harry I Wanted a New Maytag From Ed Heil's and You Wouldn't Get It. Mable."

Business on all types of appliances shot up from this point on. The telephone calls started to jump to his appliance store, intead of to the newspaper office. Now was the time to wind it up. "Mable, I Bought You a New Maytag at Ed Heil's-Hurry Home. All Is Forgiven. Har-

Everything was rosy nowbusiness rolling in fine and dandy, and everyone having a good hearty laugh, when,

4.

THREE added seams * from ONE set of rolls

with no change-over*

· Easily installed by you on your Cleatformer, the new 3-in-1 Combination Auxiliary Rolls make . . .



T CONNECTION



STANDING SEAM



. IN ADDITION to both S Cleats and Drive Cleats





Hundreds of Cleatformers are already setting new records for first, low cost fabrication. New, with the new 3-in-1 Auxiliary Rolls, the usefulness of the Cleatformer is more than doubled! Write us for the full story on this new Profit-Making Combination today!

CKFORM

4615 W. ROOSEVELT ROAD

CHICAGO 50, ILLINOIS



bang!—there it was. The letter that Ed Heil hadn't planned on.

"Dear Mr. Heil,

"My wife and I are happily married, or we were. After 30 years of wedded bliss, the solidarity of our marital relations has now been scrutinized and questioned by our friends. We have been the butt of endless telephone calls, public scandal, and ridicule. We thought we had a private life -but that was before-before your diabolical advertising campaign made our life a nightmare of: 'What's wrong with you two?' 'Can't you settle your difficulties quietly and privately?' 'How long has this been goin' on?' etc., far into the night.

"Yours very truly, (signed) Mable and Harry Boynton."

Here was a response that put things in a pickle. Ed called the Maytag people and gave them the story, point blank. Instead of groans, they replied with cheers. Harry and Mabel Boynton, 3115 Arrowhead, San Bernardino, got a new washer free of charge and with a liberal helping of more publicity. A reasonable facsimile of calm settled on the Ed Heil store again.

Asked whether he intends to patent the novel idea, Heil commented: "No, the idea is open to anyone who can use it. If a dealer in another part of the country needs a shot-in-the-arm, this series is my prescription. As a result of the ads, I can truthfully say that our sales are up—hold your hat—150 per cent. No more straight copy for me. People like to be kidded."—the hot stove Reporter.



AT-A-GLANCE TANK GAUGES





Canvassing Pays Dividends . . .

An excellent way to build new prospects and create more sales is by making doorto-door contacts with the people living in your locality.

Some dealers have hired salesmen to help in their canvassing programs. One dealer has written in telling us how he is going about it in his town.

In his shop, every morning is canvassing morning. His salesmen are systematically calling on every home in the neighborhood. At each house, they check furnace installations and leave a letter.

The plan is to make ten calls every morning — leave ten letters every morning.

Results are excellent.—The Waterman News.

... If Done Properly

On the other hand, it depends upon how you do it.

A recent issue of the St. Louis Better Business Bureau Bulletin relates that a local furnace company pleaded guilty to charges of installing furnaces without first obtaining permits. Says the Bulletin:

"In connection with the pleas of guilty in the first five cases, a company spokesman explained that the company installs a great number of furnaces and failure to secure the permits was an unintentional error by a new employee not familiar with the routine of obtaining such permits.

"We suppose the many instances of obtaining entrance to homes by giving the home owner a misleading impression, high-pressure salesmanship by deliberately condemning existing equipment as dangerous and beyond repair

Galvanized Hot Rolled Cold Rolled

the sheets you buy from
Wolff are backed with
Service



You'll find the prime steel sheets you buy from Wolff the best on the market for working and forming service. But in addition, Wolff sheets are backed with an invisible, important-to-you quality — the human, shirtsleeve brand of service that accepts your order, not as a matter of course, but as a special privilege. The entire Wolff organization is geared to make your contacts with this company responsive to your requirements. Your thorough satisfaction is no less prime than the sheets that you order.

Thousands of midwestern users of steel know from firsthand experience that there are definite advantages in working with Wolff. Why don't you, too, write or call Republic 7-9100.



Carbon Steel • Stainless Steel • Aluminum • Copper • Tinplate • Metal Decorating

BENJAMIN WOLFF L. DN PANY
General Office and Warehouse - 5880 South Seeley Ave., Chicago 36, III.
Wisconsin Office - 176 W. Wissonsin Ave., Milwaytee 3, Wise



when often it is not, salesmen masquerading as "engineers," inducing customers to sign completion slips before the work is completed, unsatisfactory installation in some cases and other tactics to which more customers take exception and complain to the Better Business Bureau than do those of any other furnace company-could be explained as "errors on the part of those not familiar with routine." To us, judging by consumer reaction during the last several years, "error" itself seems to be the routine.

"Strange to say, similar "errors" have been criticized severely by other Better Business Bureaus. In the past, company representatives have been in trouble with Federal as well as city authorities."

The Bulletin also summarizes "Inquiries and Complaints During 1948," listing a total of 937 under "Heating Equipment" and 320 under "Fuel." Twenty of the latter related to gas and oil; and 282, to coal and coke.

Yardstick to Good Heating

Manual No. 8, entitled A Yardstick for Classifying Warm Air Heating Winter Air Conditioning Systems and published by the National Warm Air Heating and Air Conditioning Association, is the type of booklet that is read from cover to cover by prospects, home owners, architects, and general contractors. It illustrates good heating practices and becomes a sales tool which clinches contracts for good heating installations. Attached to your proposal for a new heating system, it becomes the best silent salesman you ever used. It



OIL or GAS BURNING FURNACES

TAILOR-MADE QUALITY for the MASS-HOUSING MARKET



NEW UNITS — NEW DESIGNS BETTER THAN EVER!

- 6 SIZES COUNTER-FLO BASEMENT TYPE 65,000 - 85,000 - 100,000 - 135,000 - 165,000 200,000 B.t.u.
- 3 SIZES UTILITY TYPE HI-BOYS 65,000 - 85,000 - 100,000 B.t.u.
- 2 SIZES GRAVITY FURNACES 60,000 - 80,000 B.t.u.

Write for New Literature on COUNTER-FLOW HI-BOYS for FLOOR PANEL HEATING

> Built and Priced for YOUR PROFIT

> > Write

J. V. PATTEN COMPANY

Sycamore, Illinois
Originally Established in 1898
Incorporated in 1928



supports your claim to make a good installation and supports the price you ask for such an installation.

If you have not read it, read it! If you have not tried it, try it! If you have not seen it, address the editor for more details.

Where Does the Steel Go?

The automotive industry continued in first place among consumers of steel shipped in 1948 according to American Iron and Steel Institute, taking 15.4 per cent of the shipments. Jobbers and dealers, serving mainly the thousands of small businesses, received 15 per cent; construction and maintenance, 7.8 per cent; oil and gas, 6.5 per cent; and appliances, 3.1 per cent.

The figures are based on 65,973,000 tons of finished steel products.

Ice Melters

Where can I obtain information and prices on heat cables for gutters and downspouts?

JAMES W. BIRD Rawlins Sheet Metal Co. Rawlins, Wyo.

In our EQUIPMENT DEVELOP-MENTS section, October 1948, a heating cable for this purpose was described and illustrated. Mounted along the eaves, the cable melts the ice which accumulates.—ED.

Unusual

When the Hoover Commission dissolved recently, it left no unfinished business which would necessitate its continuance over a period of years and become a tax eater. In addition to presenting to Congress and the American peo-

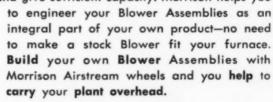


Here's a Suggestion Affecting Basic Company Policy!...help to keep idle machines running, workers busy while buyers market stabilizes

Business today readjusts from a seller's to a buyer's market. It is a time for considering ways and means of keeping in the plant as much of the purchase dollar as possible that it may take care of overhead.

Cut down the Blower Purchase dollar by half by building your own blower assemblies. Now it pays even more than at any time in more than ten years, to concentrate on **manufacture** of **every possible part** rather than to lessen manufacturing load by purchase of finished blower assemblies.

Freely available to you is Morrison custom design for your Blower Units so that they fit your space requirements and give sufficient capacity. Morrison helps you





MORRISON PRODUCTS, INC.

16816 WATERLOO ROAD . CLEVELAND 10, OHIO



ple a survey of our complicated governmental system and making comprehensive corrective recommendations, the commission set something of a record for temporary governmental agencies.

With implicit attention to the purpose of its creation, it passed into history with no employees on the payroll and with office space and furniture returned to the government. The commission was even able to refund a few thousand dollars of its orig-

inal appropriation.

Headed by former President Hoover, the commission put into practice what it preached in its 19 reports to Congress. The organization had been especially critical of agencies habitually hanging on for months and longer after they were to go out of official existence.

Nu-Way

REAL CONVENIENCE AND HEATING COMFORT WITH

Hu-Way OIL BURNERS

Hidden Wages

The typical American worker receives benefits of various sorts from his employer totalling more than \$424 a year over and above his wages. The amount is based on 1947 wage records and is reported in a survey made by the Chamber of Commerce of the United States.

A typical company, representing a cross section of private employers in widely varying industries and sizes, had a hidden non-wage labor cost of 15 per cent, or an average of 20.5 cents an hour.

There has been no general recognition of these non-wage benefits which include such payments as pension premiums, life insurance, old age and survivors in surance. workmen's compensation, discounts on goods bought, tuition refunds, profit sharing,

The Right Combination for SALES and PROFITS



product like the Nu-Way Oil Burner — plus a hard-hitting advertising program - equals more sales and profits for Nu-Way distributors and their dealers. Effective advertisements like the one shown here will make nearly 19,000,000 contacts this fall and winter in five leading national consumer magazines - American Home, Better Homes & Gardens, House and Garden, House Beautiful and House Beautiful Building Manual.

These ads will deliver Nu-Way's sales message, pointing out Nu-Way's extra heating comfort and convenience, and exclusive features. Prospective buyers will be directed to their "local heating contractor." Best of all Nu-Way's dynamic advertising program includes folders, mailing pieces, newspaper mats, and a new catalog instruction book . . . real sales helps for the men meet-

and Heating, Piping & Air Conditioning.

the editor's

payments for time not worked

Non-wage costs have risen substantially since 1947 because

unions are now demanding

Award to Frank P. Keeney

Chicago Business Paper Asso-

ciation made a surprise pres-

entation to one of the most

prominent figures in the busi-

ness paper publishing field.

Frank P. Keeney, president,

Keeney Publishing Company,

received a plaque which con-

tained a testimonial honoring

him for his fifty years of serv-

ice in publishing (picture on

Page 63). Further, it stated

its "appreciation of his sub-

stantial contributions to the

maintenance of the highest

standards of business publish-

publishes AMERICAN ARTISAN

Keeney Publishing Company

At its June meeting, the

and other similar benefits.

expensive welfare plans.

ing."

Effect of Crawl Spaces

Will you please advise us if reprints of the article entitled Crawl Spaces-Their Effect on Dwellings, on page 93 in the May issue, are available.

. . . advise the cost of 50 copies.

W. R. McLEOD

Central Equipment & Supply Co. Nashville, Tenn.

The second installment of this article was published in June but we have made no provision for reprinting it. The complete article was published in Technical Bulletin No. 2, issued by the Housing and Home Finance Agency, Washington, and copies may be obtained by addressing the agency.-ED.

You can be dressed in your dressiest-best to "in the furnace" when you convert to a Nu-Way Oil Burner! No work to a Nu-Way Oil Burner! No work to a Nu-Way Oil Burner ouicify does the rest. You get all the heat you want when you want it . . . and the heat is clean beat! Your Nu-Way Oil Burner powides convenience and comfort plus real economy of operation. Patented Air Control assures maximum heating efficiency. Patented Shielded Norzle holds fuel consumption at low level all seasons. Sold through your local heating contractor? ing the prospect. Write for new folder containing details on the Nu-Way Line of Oil Burners. THE NU-WAY CORPORATION Nu·Way "AUTOMATIC OIL HEAT CORPORATION Rock Island, Illinois Sold Through Jobbers and Distributors Also Special Applications for Furnace and Boiler Manufacturers

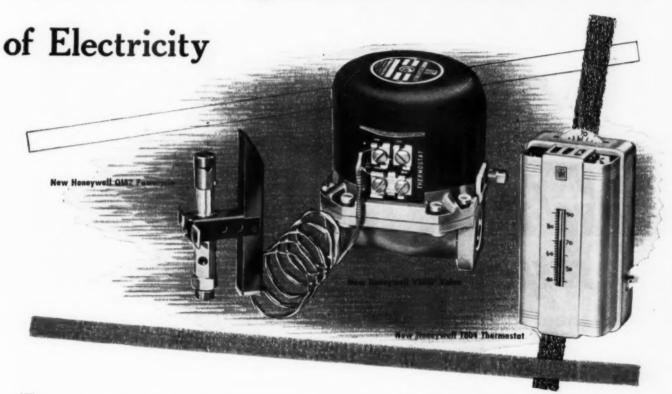
"AUTOMATIC OIL HEAT EXCLUSIVELY SINCE 1921"

THE HONEYWELL POWERPILE*

New Self-Powered Gas Package

Provides Fully Automatic Temperature

Control . . . Requires No Outside Source



THIS new gas package set gives fully automatic heating control without using any outside source of electricity. It uses Honeywell's newly developed Q182 Powerpile, which generates sufficient electrical current to operate the control system. The Powerpile consists of multiple thermocouple elements which generate electrical energy through the temperature difference between the Powerpile tip (which is placed directly into the pilot flame), and the cooler end, which is away from the flame. Should the pilot flame fail, the control system becomes de-energized, and the gas control valve closes, thus eliminating the need for additional safety pilot.

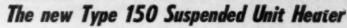
Ingenious application of the polarized relay principle in the diaphragm actuator makes available the maximum of energy, insuring positive operation of the valve mechanism. All electrical parts are out of the gas stream, assuring long life and dependable operation.

This system features the new T804 Thermostat, designed with a special mercury switch for use on extremely low current circuits. For another industry "first", Honeywell presents a thermostat which will improve comfort by heat leveling—without using an external source of electric current. Minneapolis-Honeywell, Minneapolis 8, Minn. In Canada: Leaside, Toronto 17, Ontario.



* Trade Mark

73 BRANCHES FROM COAST TO COAST WITH SUBSIDIARY COMPANIES IN: TORONTO . LONDON . STOCKHOLM . AMSTERDAM . BRUSSELS . ZURICH . MEXICO CITY



Range of Sizes - 60,000, 90,000, 120,000 and 150,000 Btu input cap.; for natural, manufactured, butane-air, LP Gas.

Compact design for extra headroom - only 31" high, including diverter and flue vent on 60,000 and 90,000 Btv sizes. Larger sizes 351/2" high. Horizontal flue-outlet on diverter.

All-welded steel heat-exchanger - horizontal tubular design with high crown sheet, no impingement of flame. Com-pletely cleanable from bottom without lowering unit.

Aerated flame burner - cast iron with drilled ports. Singleopening shutter prevents clogging. Burner size increases proportionately with exchanger, for uniform heat distribution.

Quiet, high-delivery blower — discharge may be directed to suit installation, by repositioning the adjustable louvers to blow horizontally or vertically.

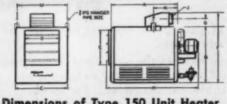
NEW! With unique design features



fuel-thrifty Mueller Climatrol suspended gas-fired unit heater

— to meet a huge demand and bring extra sales to you

Compact, Space-saving Design



Dimensions of Type 150 Unit Heater

There is a constant demand for an attractive, compact, efficient, direct-fired gas unit heater - for use in stores, shops, theatres, garages, etc. And the new Mueller Climatrol unit heater meets that demand. Its special features give you an advantage over competition that brings an extra volume of profitable sales to you.

This addition to the Mueller Climatrol gas-fired line is shipped complete, pre-wired, ready for quick, easy installation. It's a new sales-maker for you. Get behind it and you're sure to increase your sales and profits. Write for details. L. J. Mueller Furnace Co., 2010 W. Oklahoma Avenue, Milwaukee 7, Wis.





D-96



ENGINEERED FOR HIGHEST EFFICIENCY AT LOW COST



REAR VIEW

ENGINEERED to be used with standard package heating units for residential use, the H & C Ceiling Outlet is the result of many months of research and development.

EFFICIENT performance in heating is assured with these outlets which have a resistance rating equal to or less than the resistance of comparable standard size registers recommended by the National Warm Air Heating and Air Conditioning Association.

ECONOMICAL to use because the high efficiency of these outlets permit their installation with standard package heating units without changing the size of the blower.



PRICE: The H & C Ceiling Outlets are being introduced at attractive low prices in five popular sizes, complete with removable *installation flange*, sponge rubber *gasket* seal and baked on *Prime Coat Finish*. Packed ten complete ceiling outlets with flanges per carton.

World's Largest Manufacturers of Registers, Grilles and Furnace Accessories

See Your H&C Jobber or Write Direct to

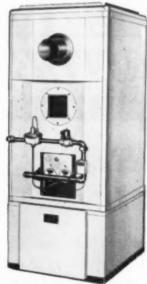


IN CANADA: HART & COOLEY MANUFACTURING CO. FORT ERIE, N. ONTARIO

Luxaires New 2 in 1 Utility Unit

Designed for Oil!

Designed for Gas!



No. H-125-E Hi-boy Air Conditioning Unit equipped with Luxaire Multi- port Gas Burner



Mounting the Oil Burner—revolutionary in its simplicity.



No. OH-106 Hi-boy Air Conditioning Unit equipped with Luxaire's plate mounted gun type Oil Burner

Here is a Luxaire unit that you recommend for either a Gas or Oil installation because you can:

- Install it as a Gas unit with Luxaire's Multiport Gas Burner.
- Install it as an Oil unit with Luxaire's platemounted Oil Burner.

Change from Gas to Oil or Oil to Gas at anytime
—You don't change the furnace in any way . You
just change the burner. Luxaire Gas and Oil Burners are interchangeable on this furnace because it is
designed and constructed for economical heating
with either Burner.

And—you keep your inventory DOWN—you keep your service UP! It's not necessary to stock both Oil furnaces and Gas furnaces. Just stock the new Luxaire Utility Unit. Install it—then add the Luxaire Burner best suited for the situation and install it. What can be simpler, easier or more profitable?

The rugged construction will give long years of satisfactory operation as either a Gas fired unit or an Oil fired unit. It is equally efficient with either fuel.

THE C.A.OLSEN MANUFACTURING COMPANY

LUXAIRE

HEATING & AIR CONDITIONING UNITS

ELYRIA, OHIO

COMFORT

MASTER

Orders,

Ask for Them

Getting the orders is as easy as asking for them . . . when your customers understand the exclusive advantages of the A-P COMFORT MASTER with the new fuel-saving "Chimney-Trol." Only the A-P COMFORT MASTER can make their hand-fired furnaces deliver all the comforts of fully automatic stokers or oil burners . . . at fuel savings of $22\frac{1}{2}\%$ or more! There just isn't any other combination like COMFORT MASTER and fully patented "Chimney-Trol" for:

- AUTOMATIC CONTROL
- STEADY, HEALTHFUL TEMPERATURE
- FREEDOM FROM FIRE WORRY



The A-P COMFORT MASTER set is easy to install because you don't have to fuss with a lot of separate gadgets and accessories. You make only two electrical connections, one of them an ordinary plug-in operation. Ease of installation means that your customers can get this vastly superior set for less than they'd pay for competitive units. And remember that with scientific "Chimney-Trol" draft control, there's no chance of warped or cracked firepots . . . no galvanizing flake-offs from smoke pipes.

Economy benefits and simplified installation make an unbeatable merchandising combination. And you can really build up your prospect list by telling local coal dealers that you have DEPENDABLE A-P Automatic Controls to keep their customers sold on coal—a sure way to win recommendations.

Order from your jobber or write . . .

AUTOMATIC PRODUCTS COMPANY

2452 NORTH THIRTY-SECOND STREET MILWAUKEE 10, WISCONSIN

DEPENDABLE Controls

FOR HEATING . . . AIR CONDITIONING . . . REFRIGERATION

There's Dynamic Sales-Building Quality in these Rybolt All-Fuels Winter Air Conditioners

• These modern Rybolt heating units, designed for all fuels, have been engineered and built to provide automatic winter air conditioning at its best. While retaining the tried and tested principles which have built up the Rybolt reputation for dependable trouble-free heating service they embody many important new refinements and advanced features.

With the convenience and dependability of automatic control they combine the advantage of distribution of filtered and properly humidified warm air throughout every room of the house. Uneven temperatures, cold floors and stratification are eliminated.

Because of this positive yet gentle uniform air circulation these Rybolt units effect substantial savings of fuel. The even distribution of air prevents some rooms being overheated while others are



Cast Iron All-Fuel Winter-Air Conditioner

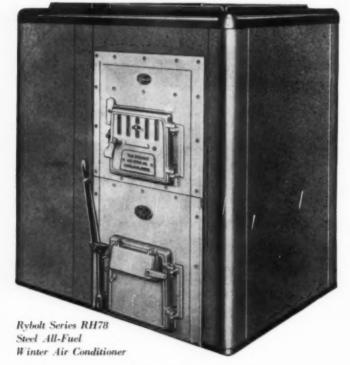
> chilly. As a result, generally lower temperatures can be maintained and less fuel burned with no sacrifice of comfort.

Easily Convertible for All Fuels

These Rybolt Winter Air Conditioners are specially designed so that they are convertible for all fuels. The conversion from coal to oil or gas and back again, when desired, can be made with a few simple changes at small expense and with little or no loss of efficiency. They can also be readily adapted for stoker firing with a minimum of mechanical change.

Rybolt is in position to furnish dependable and efficient conversion burners for gas and oil firing. This is just another feature of Rybolt service designed to give complete customer satisfaction. However, any standard conversion unit can be used satisfactorily with Rybolt winter air conditioners.

Write for Descriptive Folders.

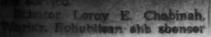


THE RYBOLT HEATER COMPANY

615 MILLER STREET

*

ASHLAND, OHIO



proy E. Chabinah, Dohioerot, one Einior n shib shenser Bittspiirgn Holhomot, yet

IMPORTANT NEWS! for users of Aluminum

United States Steel Supply Company has added aluminum to its line of products

Warehouses of the United States Steel Supply Company are now arranging to carry in stock a complete line of aluminum mill and building products manufactured by the Reynolds Metals Company. This is further indication of the far-reaching expansion program

of United States Steel Supply Company and its desire to satisfy more completely the metal requirements of its customers.

Initially, aluminum mill products - such as structurals, bars and sheets are stocked at the firm's Los Angeles, San Francisco, and Chicago warehouses.

Aluminum building products such as corrugated sheets, siding and other materials are in stock at Newark, Baltimore, Chicago, St. Paul, Milwaukee, St. Louis, Los Angeles and San Francisco warehouses.

experienced technicians will at customers' disposal at all mes to help with problems in-lying application or fabrication.



OL OF SERVICE

Contact our nearest warehouse or sales office whenever you need steel -- or aluminum

UNITED STATES STEEL SUPPLY COMPANY



Warehouses: BALTIMORE . BOSTON . CHICAGO CLEVELAND . LOS ANGELES . MILWAUKEE . MOLINE, ILL. . NEWARK . PITTSBURGH PORTLAND, ORE. . SAN FRANCISCO . SEATTLE . ST. LOUIS . TWIN CITY (ST. PAUL) Also Sales Offices at: KANSAS CITY, MO. . PHILADELPHIA . TOLEDO . TULSA . YOUNGSTOWN

Headquarters Offices: 208 S. La Salle St.—Chicage 4, III.



Announcing the NFW

MONCRIEF UTILITY UNIT

It is a GAS Fired Unit It is an OIL Fired Unit



No. PH-106 Oil Fired Utility Air Conditioning Unit with Moncrief platemounted Oil Burner

Here's another Moncrief "Years Ahead" development. The New Utility Air Conditioning Unit that is a GAS unit or an OIL unit! And it's equally efficient with either fuel.

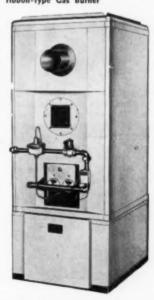
You can buy it now as a complete Gas unit!

You can buy it now as a complete Oil unit! or, You can buy just the furnace alone—install it complete with duct work. Then later you can install either Moncrief's plate-mounted Oil Burner or Moncrief's ribbon-type Gas Burner, whichever the customer prefers. Either way, you have an efficient heating plant.

And remember, this Moncrief "Years Ahead" feature—should a fuel situation arise at any time where it's necessary to change from Oil to Gas or Gas to Oil you don't need to change the furnace installation—just change the burners. Your Moncrief jobber will be glad to give you complete details.



L-125-E Gas Fired Utility Air Conditioning Unit equipped with Moncrief ribbon-type Gas Burner



THE HENRY FURNACE COMPANY

Medina, Ohio

HEATING AND AIR CONDITIONING UNITS



FURNACE PIPE AND FITTINGS

Inexpensive smaller sheet metal machines built with the SAME PRECISION as large costly ones

BECAUSE smaller machines
such as foot-operated squarsuch as foot-operated squarsuch as foot-operated squarsing shears and hand-operated
slip roll formers, do a Lion's
slip roll formers, was and sheet
share of work in many sheet
share of work in man

Jigs and fixtures are used in the machining and drilling in the machining and drilling of every part to insure accurate fit. On manually operated rate fit. On manually operation machines, leverage is carefully balanced for operation with minimum effort. Each with minimum is built to component part is built to carry a greater stress than carry a greater stress than required by any possible load. Each machine is designed and required for long, accurate service built for long, accurate service under all operating conditions within rated capacity.

Through the operation of their own foundry and other production line economies, the initial cost of Wysong and Miles sheet metal machines is surprisingly low. Simplicity of design and precision in construction mean economical maintenance and operation. WRITE for CATALOG No. 22 giving full information on Wysong and Miles sheet metal machines . . . Power and foot-operated squaring shears, power and hand operated slip roll formers, and combination sheet metal machine.



NO. 552-A, CAPACITY 52", 12 GAUGE, MILD STEEL

For accurate cutting, holddown and knife-bar travel in hand-scraped slides. The perfect slide bearing prevents rocking or deflecting . . . Other power squaring shears in 10 foot, 10 gauge; 8 foot, 3/16", 10 and 12 gauge; 6 foot, 10, 12 and 14 gauge.



POWER SLIP ROLL FORMING MACHINES

5" rolls in 48", 60", 72", 96" and 120" lengths. Initial type rolls. All rolls are gear driven and maintain the proper mesh at any setting. To save steps, roll lifting and locking levers are together on right hand end of machine.



HAND OPERATED SLIP ROLL FORMERS

2" rolls in 30", 36" and 42" lengths, 2½" rolls in 36" and 42" lengths, 3" rolls in 48" lengths. Can be used as bench models or furnished with legs. Precision made throughout.



COMBINATION MACHINE Furnished with interchangeable rolls. This one machine is used for burring, turning, beading, wiring, crimping, slitting, elbow edging and other operations. With special attachments it is also used for circle cutting and flanging.



400 LINE OF FOOT-POWER SQUARING SHEARS

Capacities 36" through 52" in 16 and 18 gauge. Rugged and fast shears that cut accurately without twist or spring . . . Other foot shears in 8', 18 ga. with self-locking, hand-operated holddown.



623 FULTON STREET GREENSBORO, N. C.

Amazing NFW Gilbarco Oil Burner!



Most Modern In Design!

Trim, streamlined, one-piece cover has real customer eye-appeal! Protects motor, fan and other parts from dirt, water, and tampering by children.

Easiest And Fastest To Service!

Cover can be readily removed for easy servicing ... only 3 acorn-head bolts to loosen. Access to all operating parts is simple and easy! Cuts servicing time to a new low!

Has Famous Economy Clutch — Costs Less To Operate!

An exclusive Gilbarco feature – gives your customers more heat at lower cost! Eliminates heatwasting soot deposits... provides cleaner, quieter operation.

Easiest To Sell!

The New Gilbarco Oil Burner combines all the economy and performance features your customers want most! A really de luxe burner at the price of conventional burners! And backed by Gilbarco's world-wide reputation for quality!

Check into Gilbarco's great new oil heating
line — the best in the business.
Valuable new franchises are now open
west of the Appalachians. Write or
wire us today for full details.

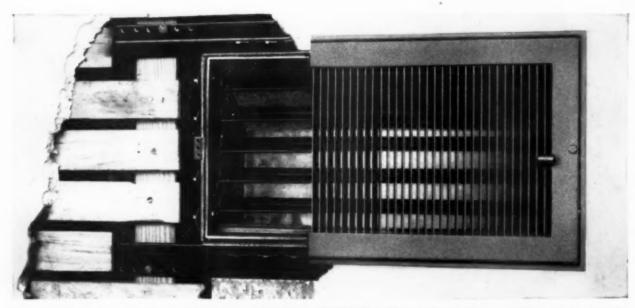
THE OIL BURNER
WITH THE ECONOMY CLUTCH

Gilbert & Barker Manufacturing Company West Springfield, Mass.—Toronto, Canada

CONVERSION BURNERS . BOILER BURNER UNITS . SUSPENDED FURNACES . WARM AIR CONDITIONERS . INDUSTRIAL BURNERS



The Lowest Cost Employee You Can Hire!



Shown With No. 256 U. S. AIR-CONDITIONING REGISTER (Most Versatile and Practical of All)



U.S. No. 125-S STUDDING FRAME

Here's one sure way to make more money on all your "new home" installations—put the 125-S Studding Frame on your payroll. The arms are flat, yet rigid—eliminate need for cutting and fitting of lath or wall board. They are 19 inches long for shifting frame to the side when necessary. The 125-S is made standard for 5/8" lath and plaster. Loops at top, bottom, and sides hold plaster to collar and prevent breaking and shrinking. This versatile, efficient frame PAYS FOR ITSELF COMPLETELY by the labor time it saves! Time records on just one job will prove it. Available from stock at your nearest U. S. Jobber or Warehouse Branch. Order today.

Send for Latest Catalog No. 47 of Registers, Grilles, and Accessories and New No. 50 U. S. Pocket Register Manual

UNITED STATES REGISTER COMPANY

BATTLE CREEK MICHIGAN

MINNEAPOLIS . KANSAS CITY . ALBANY SOLD BY LEADING JOBBERS FROM COAST TO COAST

EVICTOR STEPS info line

The New **VICTOR** Series "J" Gas Fired Winter Air Conditioners

- Same high quality construction which has featured VICTOR FURNACES for the past 59 years.
- Heat Exchanger of special corrosion resistant Alloy steel.
- Simple, efficient, single port burner...quiet with all types of gas.
- One-piece steel base pan.
- Fully enclosed burner and controls and many other VICTOR features.

(AGA APPROVED)

Write 48... about the COMPLETE Victor Line



All Low Boy and High Boy Models with



Heat Radiating

HALL-NEAL FURNACE CO.

VICTOR Quality Furnaces Since 1890

1322-1332 H. CAPITOL AVENUE : INDIANAPOLIS 7, INDIANA



Why should I buy your line?

DEALER

- Q. All right—tell me what you mean by more to offer.
- Q. I'm just one dealer. How does all that capacity affect me?
- Q. You fellows don't have anything but aluminum fittings. I've been told that galvanized is better and cheaper.
- Q. Yes, I know, but all you fellows have is fittings, isn't it?

O. K. You fellows have got the best proposition for any dealer. If you will come into the office we will work out an order of exactly how many of each thing we want to fill a mixed truckload of Char-Gale products.

CHAR-GALE

MINNEAPOLIS

because
CHAR-GALE
has more to
offerTill tell you why!

CHAR-GALE Representative

- A. With 6½ acres of production floor space we've got the capacity to meet your needs—plus the will to meet your problems.
- A. It enables us to work out a real production system. In fact, we've even designed and made some of our own machines—and, all this means a real saving to you.
- A. Whoa, there! We've got both ALUMINUM and GALVANIZED fittings. Analyze the cost of installing aluminum. It's lighter—can be worked faster—shipped cheaper—and actually costs no more in the first place. As to which makes the best fittings—that's just a matter of opinion.
- A. We've got a complete line of fittings in both ALUMINUM and GAL-VANIZED. Same on pipe and elbows. Also we have a complete line of high quality steel registers and have just introduced a humidifier that just can't be beat.

Manufacturing Co.

OMAHA

American-Standard

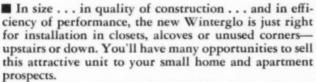
First in heating...first in plumbing

Introducing A BRAND NEW WINTER AIR CONDITIONER

for small homes and individual apartments

The WINTERGLO

An oil fired "high boy" type unit designed especially for utility installations



Engineered exclusively for oil firing, the new factory assembled and pre-wired Winterglo is a complete unit so compact that it can be installed easily in a minimum of space. Its special flange model Arcoflame Oil Burner burns any domestic fuel oil with efficiency and economy.

Built to rigid specifications, the new Winterglo has a rugged heating element of heavy gauge steel; strong, leakproof welded seams; and quiet, double inlet type, rubber mounted blower and motor. Although peak efficiency is attained with the Arcoflame Oil Burner, the Winterglo is also available without burner.

For further details about the new Winterglo and other winter air conditioners by American-Standard, contact your Wholesale Distributor. American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pennsylvania.

Look for this Mark of Merit



tio wo

loc sta res

car

7" ; 11"

the

lan

hav

fol

\$99

pre

The Winterglo is made in two sizes—with 85,000 and 105,000 Btu output per hour at bonnet—to meet small home heating requirements. Listed for closet installation by Underwriters' Laboratories and approved for less than standard clearance, it fits perfectly into the smallest amount of space in new construction or modernization jobs.



-to better business in 49!

When you sell American-Standard products you get all the selling aids you need to bring in more business. Ask your Wholesale Distributor for details of this powerful new advertising and merchandising program.

Serving home and industry

AMERICAN-STANDARD . AMERICAN BLOWER . CHURCH SEATS . DETROIT LUBRICATOR . KEWANEE BOILER . ROSS HEATER . TONAWANDA IRON

LOOK AT THIS PR

It's designed to provide industry with low-cost, high production units that are highly flexible in design and operation . . . relieving heavier presses of short runs and lighter work. Presses are practically fool-proof in operation. Frame is extremely rugged. Fingertip controls are conveniently located at hand level. Available for immediate delivery, in standard width (between uprights) of 24"-31"-36"-42" respectively. Available in special width up to 72" at small additional cost. Movable bed plates. Pumping unit has bypass relief valve which can be set at any pressure up to press capacity. Presses available for either vertical or horizontal operation. All Standard presses equipped with 2-speed builtin hand pumps for more sensitive and versatile operation.

THESE "SPECS":

CYLINDERS: Standard Models furnished with 6" bore, 71/2" stroke - spring return type; also 5" bore, 71/2" strokespring return type. Above presses are standard. Following can be furnished at additional cost: Double Acting, 6" borc, 7" stroke; 6" bore, 11" stroke; 5" bore, 7" stroke; 5" bore, 11" stroke. Special long stroke cylinders also available, up to 48" in length, for incorporation in suitable press frames of our make.

PUMPING UNITS: These units can be supplied in various volumes and pressures, in a total of 13 combinations.

Presses include V blocks, Gauge, Motor Controls, Pressure Regulator, etc., complete and ready to attach to electrical source.

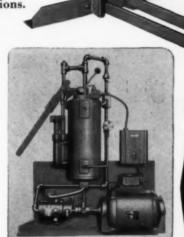
CHECK THESE USES:

There are so many everyday production uses for these versatile KRW Hydraulic Presses that we have lost count. Here are a few of the more obvious ... blanking, forming, bending, broaching, straightening, stamping, embossing, numbering, upsetting, laminating, pressing and hot or cold forging. KRW Engineers are daily developing other uses. If you have only a vague idea of how these presses might be used in your plant, let us have it in a rough form. We'll do the rest.

THESE PRICES:

Depending upon capacity of pumping equipment, prices of Standard model motor driven hydraulic presses are as follows, F. O. B. Factory: 25-ton press from \$727.00 to \$992.00. 50-ton press from \$806.00 to \$1058.00. 60-ton press from \$1070.50 to \$1135.00. 75-ton press from \$1198.00 to \$1258.00. All motors in the above units are 220/440 volt, 3 phase, 60 cycle. Any change in motor specifications is extra. *Subject to change without notice.

215 MAIN ST. · BUFFALO 3, N.Y.



MODERNIZE AND MOTOR-IZE YOUR PRESENT KRW PRESS with one of these com-pact motor drive units. They come complete ready to connect to your press. Require very little extra floor space. Write for conversion unit prices, giving the capacity and serial number of your press.

MAIL THIS COUPON

It will bring you all the money-saving facts about these low cost, high production hydraulic presses. Now is the time to get ready for the highly competitive days ahead.

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

Please send me complete information on KRW Motor Driven Presses as follows:

- □ 25-ton □ 50-ton □ 60-ton □ 75-ton presses

- motor drive conversion unit Press Cap. Serial No.

Name

City and Zone ...



Born Yesterday (AND EVERY DAY)

MOR-SUN — the first completely new post-war furnace to reach the market, hasn't rested on its laurels. New ideas are born every day; ideas that will show up in the MOR-SUN to increase its efficiency — to make it easier to sell — to make it more and more dependable.

These ideas are born everywhere. The stork brings them from a home owner; from a service man; from an installer. We consider every one — if it has merit — we use it.

True . . . the 12-gauge, all die-pressed steel MOR-SUN Furnaces which are rolling off the assembly lines today are the finest MOR-SUNS ever manufactured. We think they are the finest furnaces ever produced. But they are not the last word for all time in MOR-SUNS!

Generally, the changes are slight indeed. Nevertheless, the cumulative result of this continuing field and laboratory research and experimentation program has already developed the world's finest heat exchanger. . . unparalleled construction and design features . . innovations and improvements too numerous to list here.

To the Merchandiser, Morrison research is paying off in expanded sales . . . less service calls . . . greater. profits.

Want the story?



MORRISON
STEEL PRODUCTS. INC. • BUFFALO 7 N Y



A REVOLUTIONARY NEW DEVELOPMENT

New Profits For You - New Automatic Comfort For Your Customers

Now, for the first time, your customers can have all the advantages of fully automatic temperature control with oil burning space heaters and floor furnaces—at the lowest cost on the market. The new Detroit CRC-251 Flame-Modulator is the answer! Completely mechanical in operation, it provides a wide range of temperature adjustment, controlling room heat by regulating fuel flow without electricity. Furthermore, there are no added installation problems because the Flame-Modulator is installed at the factory.

When you place your order, insist that the manufacturer you buy from includes the Flame-Modulator in his line of oil heaters. In this way, you can be sure you are getting the very best, for, like all Detroit Controls, the Flame-Modulator is Certified. It's another great first for Detroit bringing new, economical comfort for your customers, and new profits for you!



Look for this Certificate
— only Authorized
DETROIT Wholesalers
sell Certified Controls.

DETROIT
LUBRICATOR COMPANY

5900 TRUMBULL AVE., DETROIT 8, MICHIGAN
Division of American Radiator & Standard Sauritary corroration
CANADIAN REPRESENTATIVE: RAILWAY & ENGINEERING
SPECIALTIES, LTD. — MONTREAL, TORONTO, WINNIPEG



DETROIT HEATING AND REFRIGERATION CONTROLS • ENGINE SAFETY CONTROLS • FLOAT VALVES AND OIL BURNER EQUIPMENT • DETROIT EXPANSION VALVES AND REFRIGERATION ACCESSORIES • STATIONARY AND LOCOMOTIVE LUBRICATORS

Sorving Rome and industry American-Standard - American Blower - Church Seats - Detroit Lubricator - Kewanee Boiler - Ross Heater - Tonawanda IRON

IT TAKES
IT MAKES

... FOR REAL WINTER AIR CONDITIONING ... PROFITS ON EVERY INSTALLATION



• Did you know that there are over 7,000,000 good gravity warm air furnaces which are waiting for heating dealers to convert to ideal Winter Air Conditioning units? That's right! So... Viking makes the job easy for you with its top-quality combination that will give you a two-way profit on every job. The Viking "Qui-ette" Blower is the easiest and quickest seller in the heating industry. Compare it with any Packaged Blower and you'll see why. As for the Humidifier, do you know of any model that has Viking's 9 outstanding features, including a top-seat float valve which any home owner can adjust?

Use only the Viking combination for best results and bigger profits.
 Ask your jobber. He knows.



AIR CONDITIONING CORPORATION

5600 WALWORTH AVE. . CLEVELAND 2, OHIO





TYPE 2532 Cembination Valve and Pilot in combination with Solenoid Gas Valve gives gas heating new

SIMPLIFIED INSTALLATION

...brings you these outstanding features:

- Simplified wiring easier installation.
- Positive safety prevents flow of gas in event of pilot flame failure.
- Positive valve closure individually ground and lapped valve and port.
- High plunger force special design assures positive opening and closing without sticking or sluggish action.
- Available with or without manual reset for use in event of power failure.

Write for complete catalog of White-Rodgers Gas Controls



Liquid-filled safety pilot, actuates S.P.S.T. electric switch. Available with universal mounting brackets, 30° capillary, angle or vertical fittings.



ELECTRIC CO. ST. LOUIS 6, MO.

FOR REFRIGERATION - HEATING

DON'T LET "TRADITION" Touble Your HEATING INVESTMENT DRAVO Counterflo HEATERS CUT SYSTEM COSTS and FUEL COSTS!

Why pay toll to tradition by installing an elaborate wet-type heating system in structures having large open areas . . . when Dravo Counterflo Heaters can do the job for a fraction of the cost of installation . . . and a fraction of the cost of operation?

No expensive piping . . . these 80 to 85% efficient heaters "manufacture" the warmth right in the area where it is used. No involved installation work—the 100-150 foot air-throw warms the working-zone of large open areas without duct work. No delays . . . the heaters are ready for immediate delivery, require only power, fuel and vent connections—and they're ready to go! No maintenance headaches . . . the rugged, mill-type construction, the stainless steel combustion chamber, the top-drawer engineering all contribute to long, attention-free service. No fuel worries—heaters use either oil or gas, and can be readily converted from one to the other. No uncertainty—AGA approved and UL listed.

Here's a good point to remember. Practically all heating systems end up by warming the air. Dravo Counterflo Heaters reduce cost and eliminate waste and complication, by warming the air to begin with. The biggest names in American industry are listed on the roster of enthusiastic users. Let us send you a list of typical customers, so you can verify heater performance for yourself. For the detailed story of construction, operation, installation and results, ask for Bulletin AB-523-1



DRAVO

CORPORATION

DRAVO BUILDING, PITTSBURGH 22, PA.

Dravo also manufactures the DRAVO CRANE CAB COOLER for air conditioning hot-metal crane cabs.

PITTSBURGH . CLEVELAND . PHILADELPHIA . DETROIT . NEW YORK . CHICAGO . ATLANTA . BOSTON

Sales Representatives in Principal Cities. Mfd. and Sold in Canada by Marine Industries, Ltd., Sorel, Quebec.



Meirzin

ELECTRONTIC ZINC-COATED SHEETS AND STRIP





A fundamental advantage possessed by Weirzin—one you cannot afford to ignore—is that it can effect important savings in die maintenance costs. Its tight electrolytic zinc coating remains intact in drawing operations, serving like a film of lubricant, to prolong the useful life of the dies. For example, a manufacturer reports that his usual production run of 100,000 pieces per set of dies, using ordinary carbon steel, was increased to 400,000 pieces when he adopted Weirzin.

Weirzin effects other appreciable savings in manufacturing, too. Sheets and coils require no pickling or buffing—and bonderized Weirzin products need no primer under paint.



WEIRTON STEEL CO.

WEIRTON, W. VA., Sales Offices in Principal Cities
Division of NATIONAL STEEL CORPORATION, Executive Offices, Pittsburgh, Pa.



• Sheet metal workers prefer Niagara Foot Shears because they combine strength, stiffness, lightness and portability. Unbreakable steel construction and absence of deflection mean accurate cutting. They provide smooth, well-balanced action, convenient operation and clear visibility of cutting line.

711337

FOOT SHEARS

Write for Bulletin 80-E

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N.Y.
DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK



N. Y. ORK





THERE'S NEW BUSINESS IN THE BASEMENTS ALL OVER TOWN!

YOU can get it...with the

ALL-YEAR CONDITIONER

(BLOWER-FILTER PACKAGE)



You make your regular profit, though these are the lawest-priced blawer-filter units on the market. They're priced to win a big slice of NEW business for you, beat out competition, and turn prospects into sales. The big value of top quality at a new low price will make a friend with every sale.

DESIGNED AND MANUFACTURED ENTIRELY BY "UTILITY"

Be Headquarters for

with the Unitary Lin

Count up the gravity warm air systems around town! Plenty of those home owners are live prospects for better heating and fuel savings. That's what you can give them—through conversion to a forced-air system with a *Utility* All-Year Conditioner. It's extra money, extra business... that you can get from your old customers, and your competitor's old customers.

The Utility All-Year Conditioner is built to make friends for you. A dynamically-balanced, high performance Utility-built blower, motor, Fiberglas filters, and variable pitch pulley, are enclosed in a heavy steel cabinet. You can install it quickly, easily. With three models providing a CFM rating range of 700 to 2600, you can take any job.

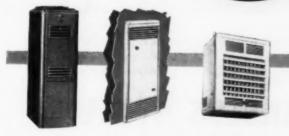
For prices, catalog sheet, and complete details on how we help you sell, send the coupon NOW.

UTILITY appliance corp.

4857 S. Alameda St., Los Angeles 11, Calif.

DIVISIONS

Gallers & Sattler . Occidental STOVE CO.



FORCED AIR FURNACES WALL HEATERS

UNIT HEATERS

the whole profit picture!

Please send complete information on your All-Year Conditioner, how you help us sell, and the *Utility* dealership arrangement.

NAME

ADDRESS

If you want to give your customers

> "the FINEST in roofing products'

Won't rust or corrode . . . will not discolor or stain walls...never needs painting . . . lasts as long as the building . . . first cost is final cost

You don't have to sell people on the advantages of Y Stainless Steel-everyone knows it is unsurpassed for beauty, durability and permanence. But when you suggest Stainless Steel for gutters, downspouts, flashings and other roofing accessories, the first thing they are likely to say is "Sounds fine, but can we afford it?"

Right there you've got a customer. Because the answer is "Yes." For, generally speaking, the cost of a well-designed job made with the proper grade and finish of U·S·S Stainless will be little or no higher than the cost of the better grades of roofing products-none of which can match Stainless for strength or corrosion resistance.

That's because Stainless Steel can be used in relatively thin sections without sacrifice of durability. And because it costs nothing for replacement or maintenance, Stainless Steel in the long run is by far the most economical material.

U-S-S STAINLESS STEEL IS EASY TO FABRICATE AND EASY TO INSTALL

The U.S.S Stainless recommended for the most applications is so light yet so strong that gutters and downspouts can be fabricated in extremely long lengths which are so rigid that they handle easily and thus greatly simplify and speed up installation. Fabrication of these comparatively simple forms presents no special problems, requires neither special shop procedures nor special equipment.

U.S.S Stainless Steel sheet and strip are readily available now. The proper grade - U·S·S 18-8. Type 302 - is stocked by most warehouse suppliers and by United States Steel Subsidiaries.



AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO - CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK



PLATES . BARS . BILLETS . PIPE . TUBES . WIRE . SPECIAL SECTIONS

9-1402

Headquarters for...





that's YOU - with the Comments line

Here's a powerful sales tool that makes you stand head and shoulders above the crowd of heating dealers and contractors shouting the same old story. "Headquarters for Guaranteed Heating Performance" brands YOU as an expert heating counselor who combines know-how and UTILITY equipment for heating satisfaction. To put this idea over permanently

- and to produce immediate business -Utility gives you a powerful advertising

and sales program.

With the Utility line you have the units to get both residential and commerical jobs...with BTU capacities to fit any size job. Top quality and efficiency have been proved in the quarter-century of Utility production.

Get the whole story on this unbeatable combination of customer satisfaction and sales success for you.

Single and Dual

For every type of single and multiple-story structure. Pre-assembled with plaster guides and header for installing in any 4" wall without furring. 3 sizes—BTU range, 25,000 to 50,000.



Forced Air

FURNACES

Compact, for small space installation. Fully automatic. Utility-built blower

and burner. 4 sizes—BTU range, 75,000 to 150,000.

UTILITY

appliance corp.

4855 S. Alameda St., Los Angeles 11, Calif.

Gaffers & Sattler . ()ccidental STOVE CO.



ALL-YEAR CONDITIONER (Blower-Filter Package)

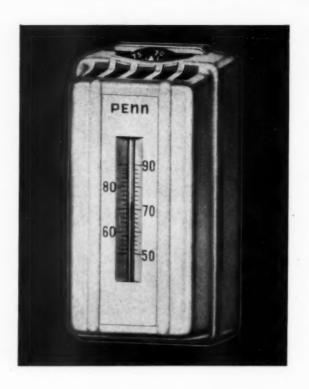
Dynamically balanced, high performance Utility-built blower, Fiberglas filters, variable pitch pulley, heavy steel cabinet CFM ratings from 700 to 2600.



Suspended UNIT HEATERS

Completely self-contained. Quiet-slow speed, resilient base motor on streamline mounts. Individual burner for each element section prevents flame impingement. 4 sizes-BTU range, 60,000 to 225,000.





PENN THERMOSTATS BANISH 'COLD 70' and That's a Fact!"

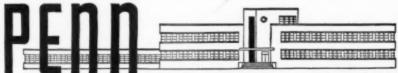
"Cut through all the fancy language about thermostats and you find the heart of the matter is comfort—real heating comfort. With automatic heat of any kind that means frequent, short burner operations in place of longer 'on' and 'off' periods. That's what Penn achieved—15 years ago—with heat anticipation. That's why Penn thermostats, during all these years, have given the closer temperature regulation that means real comfort—an end to zig-zag heating and the shivering of 'cold 70'; and that means good customer relations."

Take a tip from this typical experience of heating dealers—give your customers the comfort, and yourself the satisfaction and profit, which the Penn original beat anticipating thermostat assures. You'll appreciate the simplicity of the two-wire installation, the snap-acting contact structure and the all-around dependability of Penn thermostats. They banish "cold 70"—and that's a fact. Penn Electric Switch Co., Goshen, Ind. Export Division: 13 East 40th St., New York 16, U.S.A. In Canada, Penn Controls Ltd., Toronto, Ont.

Here's What Penn Heat Anticipation Does...

- * Holds the temperature at selected level within one degree or less.
- * Avoids "cold 70"; ends discomfort of "zig zag" heating.
- * Automatically compensates for outside weather conditions.
- * Provides more frequent, short burner operations instead of longer runs and standby periods, assuring even flow of warmth for greater comfort and fuel economy.

It "hugs" the selected level for closer temperature control



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, PUMPS, AIR COMPRESSORS, ENGINES, GAS RANGES

AIRTEMP DEALERSHIPS AVAILABLE!

Investigate today-

Sell the famous Chrysler Airtemp Heating and Air Conditioning Products—Big Market— Strong Demand—Good Profits

● You'll find Chrysler Airtemp products a fine line to sell—well known and highly regarded—nationally advertised and in good demand. They are designed and built to high standards for dependable performance and long life.

Here are quality products priced to meet the needs of home, business and industry. Prod-

ucts to sell 12 months a year assure you profit opportunities in every season. And you'll find we back our dealers with close cooperation in advertising, promotion and field engineering service.

Investigate this opportunity while it still exists. Write today—without obligation—for full details. Or mail the coupon.

NATIONALLY-ADVERTISED PRODUCTS FOR YEAR-'ROUND SALES

(you can handle heating or air conditioning separately if desired)

Gas and Oil-Fired Furnaces and Winter Air Conditioners • Gas and Oil-Fired Boilers • Oil, Gas and Electric Water Heaters • Oil Burners • Coal Furnaces • Convertible Winter Air Conditioners for gas, oil or coal • Year Around Air Conditioning Units (Heats and Cools) • Anthracite and Bituminous Domestic Stokers • Blower Units for Furnaces • Stoker-Fired Water Heaters • Room Air Conditioners • Packaged Air Conditioners • Commercial Refrigeration • Condensing Units • Central Systems Cooling Equipment • Marine Refrigeration • Water Cooling Towers.



Chrysler Airtemp

"PACKAGED" AIR CONDITIONING
CENTRAL STATION SYSTEMS
HEATING AND COMMERCIAL REFRIGERATION

AIRTEMP DIVISION OF CHRYSLER CORPORATION DAYTON 1, OHIO

In Canada: Therm-O-Rite Products, Ltd., Toronto

(Ast off)	AIRTEMP DIVISION, CHRYSLER CORPO	DRATION		
Jole	Send immediately full details about the arrangements, without obligation.	e Chrysler	Airtemp	dealership
1000	Name			
Jay 3	Company			
には	Address			
A MILLY	CityZ	one	_State	
N. M. Mindelminde				A.A. 7-49

CRAFTSMEN

RECOGNIZE by these fine features in

ADJUSTABLE WRENC



"Crescent" is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and

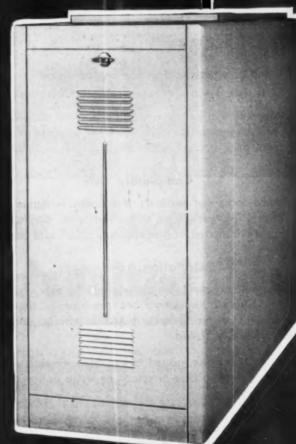
JAMESTOWN, NEW YORK COMPANY, CRESCENT TOOL



COMOMNY HIGH EFFICIENCY







ATFLOWER AIR-CONDITIONERS, INC.
SAINT PAUL MININGSOTA







★Easy Installation Long Life

On new equipment and for replacements insist on Perfex Twin Contact Primary Controls!

Your customers will be more satisfied because these controls are rugged, require less service...the powerful, sensitive exclusive tube and channel stack element is less affected by soot...easier to clean.

Completely Safe

The control locks out *instantly* if element is damaged or fails during operating period or when abnormal conditions occur. Recycling is eliminated. It operates only under *safe* conditions.

Installation Advantages

You save time and money on installation because leveling is unnecessary...conduit knock-outs are convenient...there is ample wiring space. Operating cycle easier to check...simple understandable two-wire circuit.

Service distributors are located in key cities. Consult the classified section of your telephone directory or write us for the name of the one nearest you.

Dealers Who Want the Best and Safest Controls Order and Specify

TWIN CONTACT CONTROLS



Series 5520
OIL BURNER
PRIMARY CONTROL

One of a complete line of Twin Contact Controls for every heating application.

> MILLIONS OF SATISFIED USERS



In Canada, Perfex Controls Ltd., Toronto 1, Canada





More rust-resistance for your money in Beth-Cu-Loy Galvanized Sheets

(made from copper-bearing, open-hearth steel)

The base metal used in Beth-Cu-Loy Galvanized Sheets is open-hearth steel containing 0.20 to 0.30 pct copper. Atmospheric exposure tests in various localities show that steel of this composition outlasts ordinary steel and open-hearth iron.

In addition to this long-lasting base, a tight, uniform coating of Prime Western zinc gives Beth-Cu-Loy Galvanized Sheets double defense against corrosion.

Though you might expect sheet metal of

this quality to be costly, actually Beth-Cu-Loy Galvanized Sheets are priced at little more than ordinary galvanized sheets. This small difference in price is returned many times over in longer service and greater satisfaction to the customer.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

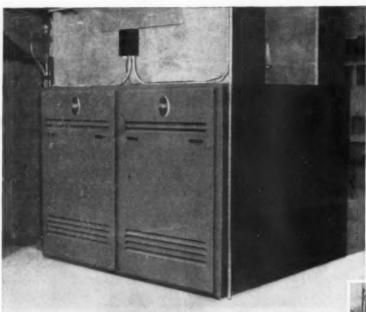
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Export Distributor: Bethlehem Steel Export Corporation

Beth-Cu-Loy Galvanized Sheets



on.

"BRYANT Winter Air Conditioning provides Customer Comfort AT LOW COST"



says A. Wilner, Owner-Operator, Western Auto Associate Store, Somerville, N. J.



"Bryant Winter Air Conditioning does a very highly satisfactory job in our store... warms, filters, humidifies and circulates the air to provide comfort for customers and employees alike. We are happy to recommend Bryant Automatic Heating."

Bryant Model BA-88 Winter Air Conditioning installation in Western Auto Associate Store delivers warm air to the store through overhead supply outlets. Return air is removed from the store at several points along the floor line. Heating contractors: Elling Bros., Somerville, N. J.

You can get a *full* share of the warm-air heating business in your area with the Bryant Model BA-88 Gas-Fired Winter Air Conditioner. The BA-88 has a place in the forced warm-air systems of all types of homes and helps create ideal indoor weather in offices, stores and other commercial applications.

These Bryant-engineered features set the BA-88 apart from ordinary warm-air equipment: All cast iron tubular heat exchanger for years and years of superior service and high operating efficiency; rugged cast iron burners with raised, *precision-drilled* ports (specifically drilled for the type of gas to be burned, whether it be natural, manufactured, LP or mixed gas); and the famous Bryant Diaphragm Valve and Automatic Pilot.

The Bryant Model BA-88 Winter Air Conditioner is fully enclosed in its sturdy steel jacket, requires a minimum of floor space for equipment of its type. It is made in seven standard sizes, with inputs from 60,000 to 250,000 Btu per hour.





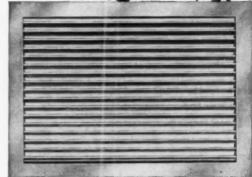
BRYANT HEATER DIVISION
Affiliated Gas Equipment, Inc.
Cleveland, Ohio • Tyler, Texas

THE MOST COMPLETE LINE OF GAS HEATING EQUIPMENT IN THE NATION



Aerovane





You'll complete your next job quickly, and you'll cut costs doing it, with Standard AEROVANE and TRI-FLEX Grilles and Registers. Size standardization means efficient mass production...results in real savings to you. And, you'll get prompt shipment...all standard items are carried in stock.

Individually packaged in sturdy cartons...units are protected from damage in transit or on the job... easy-to-read labels facilitate sorting and locating.



10 x 6	24 x 24
10 x 8	30 x 12
12 x 6	30 x 18
12 x 8	30 x 24
12 x 12	36 x 18
. 18 x 6	36 x 24
18 x 12	36 x 30
18 x 18	48 x 24
24 x 12	48 x 30
24 x 18	48 x 36



 For detailed description, engineering data and complete selection information . . . write today for a copy of Catalog 465.

949

NOW

THE NEW Anthra-Pla FOR NEW HOMES



LOW COST

—competitively priced . . . meets all requirements for low cost housing.

BURNS CHEAPER SIZES OF ANTHRACITE

—pays for itself in fuel savings. Built-in tankless coil supplies low cost hot water.





FULLY

—coal feeds direct from bin . . . ashes discharge by gravity into container within unit.

RATINGS

-Model C-1, Steam 325 sq. ft. Hot Water 515 sq. ft. Model C-2, Steam 550 sq. ft., Hot Water 880 sq. ft.



—jacket finished gleaming white and red enamel on steel.

NEW PRINCIPLE

of feeding and burning anthracite across a single, stationary, perforated plate. Burner and mechanism is attached by two bolts and all working parts are outside boiler.

Dealerships Available — Write to Anthracite Institute for complete information about the "ANTHRA-FLO" and the names of the manufacturers who now have units available. Get details of the attractive dealer franchise plan for this exclusive type, low priced automatic heating unit.



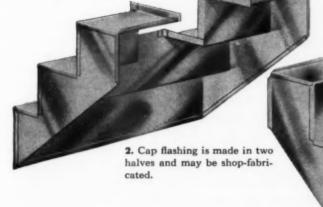
ANTHRACITE INSTITUTE

101 Park Avenue • New York 17, New York

How to Flash a Chimney so it can't leak...



 Base flashing in position with brickwork ready to receive cap flashing.



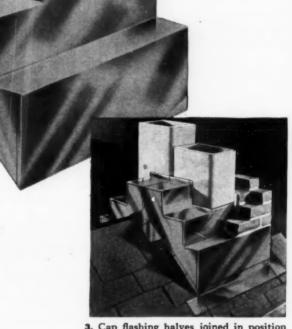
Have you ever been called back on a job to repair leaks at the chimney flashing? Very likely, in many cases, the homeowner expected the additional work to be done without charge.

Here is a flashing design which should put a stop to those unprofitable "call backs." It's a job you will be proud of, and few owners will question the wisdom of paying a little more for this assurance against future trouble and expense.

A full-scale model displayed at The American Brass Company's Exhibit, National Association of Home Builders Convention, Chicago, attracted much attention, and received very favorable comments from architects, builders, sheet metal contractors and homeowners.

As will be seen, the cap flashing, made in halves, may be fabricated in the shop and quickly joined on the chimney by a simple lock seam.

Detailed drawings, for flashing both center chimneys and outside chimneys, have been prepared and will be sent free on request.



3. Cap flashing halves joined in position and showing continuation of brickwork.



THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
In Canada: ANACONDA AMERICAN BRASS LTD.,
New Toronto, Ont.

949

AUER de luxe The NEW

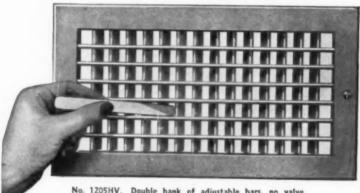
treamliner

MULTIPLE DEFLECTION

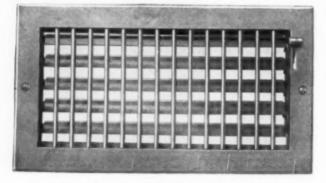
Air Conditioning Registers & Grilles



No. 1005V. Single bank of adjustable bars, no valve.



No. 1205HV. Double bank of adjustable bars, no valve.



No. 1005V-HML. Single bank of adjustable bars, with

Streamliner wall registers and grilles, for high grade air conditioning systems, are designed and built with the fine craftsmanship you expect from Auer. They provide better diffusion for high velocity outlets. The Series includes models with single bank of adjustable bars (vertical or

horizontal), also with double bank of adjustable bars (vertical in front and horizontal in back, or the reverse), also all above four types with the addition of horizontal multi-louvre valves in the rear, controlled by lever on face of register.

The design of the bars and method of mounting them are original with Auer. Bars are hollow moulded, beveled, perfectly formed, and smooth in contour. They are pivoted in the frame on special split sleeves. This improved expansion insert furnishes just enough tension to hold bars firmly where set, yet permits sufficient free movement for adjustment to the desired angle with one simple tool. Bars may be

set at any angle and in any grouping. Blades of multilouvre valve are pivoted on rivets to prevent vibration. All Streamliner registers are equipped with gaskets.

We offer these superior registers at moderate prices, and with pride in their high standard of beauty and excellence. You too will be proud to install them on your very finest work. Write for descriptive folder S-49.

Auer's full line of registers and returns for air conditioning or gravity systems is shown in Auer Register Book, sent on request. For perforated grilles, ask for Catalog "G".

THE AUER REGISTER CO., 3608 PAYNE AVENUE, CLEVELAND 14, OHIO



CHECK THE FACTS and you'll find
WILLIAMS OIL-O-MATIC is EASIER TO SELL than to SELL AGAINST!

The Sensational Exclusive Sealed Thrift White



Pittsburgh Testing Laboratory tests have proved Oil-O-Matic's ability to burn either a No. 1 Oil or a 100% catalytically cracked oil with equal ease and efficiency.

NEW Vair-O-Meter
NEW Hydraulic Shut-Off Valve
NEW \$5,000,000 Oil-Air Nozzle
NEW Capacitor-Start Motor
NEW Cushion Coupling



FUEL-SAVING... DOLLAR-SAVING... NEVER BEFORE POSSIBLE

Every moving part except motor and fan FACTORY-SEALED in one, compact, precision-built unit. This amazing UNIT holds . . .

- FUEL PUMP (eliminates need for "extra" pump whether oil storage tank is above or below burner)
- DUAL-PISTON Thrift Meter (6900 impulses per minute. Infinitely adjustable to provide precise oil measurement for all firing rates)
- HYDRAULIC POWER REGULATOR (permits unique application of hydraulic pressure for instant positive action of oil shut-off valve)
- PRESSUROTOR—new, improved (delivers internal air for thorough, complete Low Pressure atomization of Oil)

NEW, COMPLETE UNITS for warm air, steam, or hot water. Featuring Model Fifty-Ten performance.

> A few dealer territories are available in our expanding dealer organization. Write Factory today for all facts

WILLIAMS OIL-O-MATIC DIVISION

Eureka Williams Corporation

BLOOMINGTON, ILLINOIS.



unit for every warm-air heating need

Large capacity or small—forced-air or gravity—oil, gas or coal—there's an Armstrong unit for every warm-air heating need or preference.

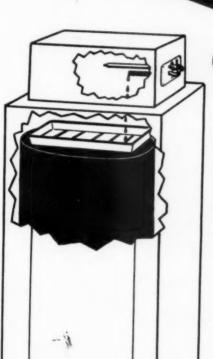
In coal-fired units, Armstrong offers 37 models and sizes, ranging from 81,000 to 700,000 BTU at the bonnet. Gas-fired—furnaces in 10 models and sizes from 70,000 to 210,000 BTU input, and two conversion burners. Oil-fired—furnaces in seven models and sizes from 70,000 to 200,000 BTU at the bonnet, and four oil burners from ¾ to 10 GPH capacity.

It's easy to see the advantages of handling this complete line. With such a selection of units there's no need to call upon different suppliers for different furnaces. You can get everything you need in ONE line—from Armstrong.

Armstrong heating equipment is distributed to the installing dealer by authorized Armstrong jobbers. If you are a dealer, write or wire today for the name of the Armstrong distributor nearest you. If you are a wholesaler, your territory may be open—write today for details on Armstrong's selective distribution plan.



ADAPTABLE TO ALL HIGH FURNACES Lacosile Automatic Drip Humidifiers



Vaporite Humidifiers may be installed either above bonnet or with the pan resting on the bonnet.

Vaporite Automatic Drip Humidifiers are made for tailored fitting. Attach easily to all types of high furnaces. All accessories are included in one kit with nothing extra to buy.

Your furnace will receive more enthusiastic response from value-wise customers when you install Vaporite Automatic Drip Humidifiers. They know the advantages of Automatic's bi-metal, fool-proof thermostat — the fingertip control, the long-lasting stainless steel pans. All these advantages and more add up to additional years of trouble-free service. That's why hundreds of thousands of Vaporite Humidifiers are in use now as regular equipment.

Unbeatable Performance Features

- Air tight valve.
- No clogging.
- Pan easy to clean.
- No electrolytic action. Valve movement prevents clogging by lime.
- Fingertip adjustment for more or less humidity.
 - No stagnant pool of water left in pan.
 - Hot pan surface gives immediate vaporization.
 - Stainless steel pan heats fast.
 - Easy to install fits all types of high furnaces.

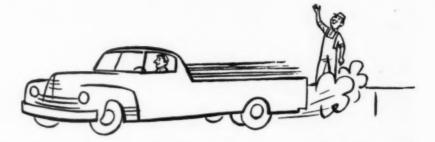
Write Today

prices, deliveries and discounts en the amazing new Vaporite **Automatic Drip Humidifiers.**

Dept. A-7

Automatic HUMIDIFIER CO. CEDAR FALLS, IOWA

For quick service...



technical help...



lower inventory costs...



call your ARMCO Stainless Steel Distributor

When a new job comes in — and you need a certain size of stainless steel in a hurry — all you have to do is telephone your nearest ARMCO Distributor. Chances are he'll be able to ship it to you within 24 hours.

With this kind of service, there is no need to tie up money in heavy inventories. You can save valuable storage space, too — and use that space for money-making shopwork.

Besides these immediate dollars-and-cents values, you can get technical assistance when it's needed. With his staff of experienced salesmen and the metallurgical service of the mill, your ARMCO Distributor is in a good position to recommend the proper grade of stainless for each job. And he can also give you helpful tips on fabricating and shop practice. (Ask him about "Stainless Fabricating Tips," Armco's new and complete shop manual.)

Next time you need stainless sheets, bars, angles or fasteners, get in touch with your ARMCO Distributor. If you don't know his name, write or wire Armco Steel Corporation, 109 Curtis Street, Middletown, Ohio. Export: The Armco International Corporation.

ARMCO STAINLESS STEELS





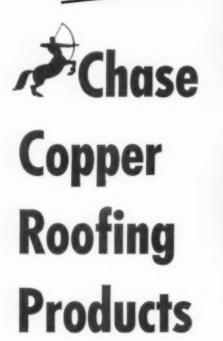
Now! A Unit Designed with the TRADE in Mind!

Another Richmond "Plus". In the new Richmond Oil-Fired Winter Air Conditioner you get a real installation timesaver. First locate your furnace. Then you simply hook up the burner to the panel and all elements are right where you want them. No time and trouble on unnecessary adjustments—that means \$25 to \$35 saved.

Final Assembly is quick, too. This Richmond unit comes in three packages—the heaviest weighs only 395 lbs. (appr.). All you do is place combustion and burner assembly in the furnace unit, spin four wing nuts and make electrical connections at junction box. That's all! Now you're ready for supply lines and flue connections. Unit installed!







Chase GUTTERS, DOWN-SPOUTS, ACCESSORIES

Immediate delivery, outstanding durability -two big reasons why you'll want to use the Chase line! Gutters, downspouts, heads, elbows, shoes, mitres, ends, outlets and caps are all made of 16 ounce copper for lasting service. Chase accessories for use with gutters and downspouts also include hangers, circles, clips and wall ties.



Chase THRU-WALL COPPER FLASHING

Here is an economically priced 3-way bond copper flashing for permanent waterproofing of masonry walls in industrial and monumental construction. Unique design assures rapid, complete drainage of any moisture penetrating the wall.



Chase COP-O-TOP

Wherever flashing is not exposed, Chase Cop-O-Top is ideal for waterproofing and damp-proofing. It consists of thin-gauge sheet copper permanently bonded to asphalt-impregnated Kraft paper. Chase Cop-O-Top is flexible and tough, easily folded and formed by hand without tearing or cracking.



FREE Mail the coupon for booklet describing Chase Copper Products

Chase Brass & Copper Co. Dept. AA79, Waterbury 20, Conn. Please send me your booklet, "Chase Gentlemen:

Copper Roofing and Roofing Products."

NAME_

ADDRESS -

OTHER CHASE COPPER ROOFING PRODUCTS

SHEET, ROLL AND STRIP COPPER, COPPER STEP FLASHING, NAILS AND RIVETS, SOLDER-ING COPPER, LEAD - COATED COPPERS.

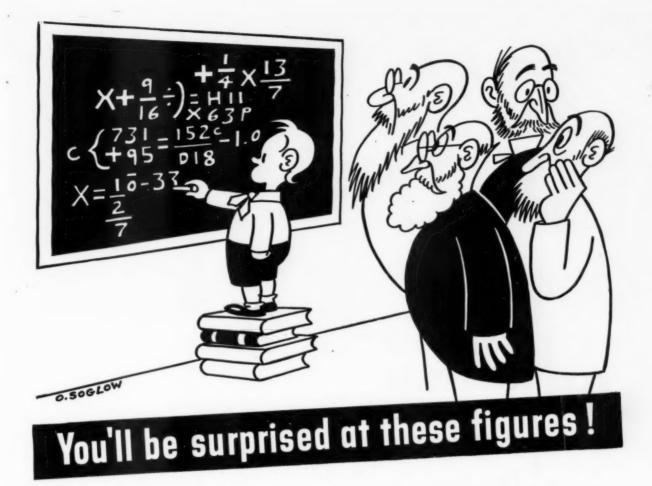


the Nation's Headquarters for BRASS & COPPER

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK ... handlest way to buy brass

ALBANY! ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DALLAS DETROIT HOUSTON! INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINHEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER! ST. LOUIS SAN FRANCISCO SEATTLE WATERBURY (Isoles Office Only



- 80 million Americans own \$48 billion of
 U. S. Savings Bonds.
- 20,000 of the nation's 38,000 firms employing 100 or more persons are operating Payroll Savings Plans.
- 7,500,000 workers are buying an individual average of \$20 of Bonds per month.
- For the year 1948, sales of Series E Bonds exceeded redemptions by \$495,148,000. The net figure for all Series after redemptions and maturities was \$2,151,140,000.

What does all this mean to you? Weli, it means first of all that your Treasury Department is successful in its program of increasing the nation's economic security by spreading the national debt. Secondly it means that most of the nation's business leaders recognize the value of the Payroll Savings Plan sufficiently to promote it within their companies.

For example...

To give you some idea of the Plan's growing popularity: 86,384 employees, of a prominent electrical manufacturing company were investing in Bonds at the rate of \$30,005,270 as of the end of 1948. This is a gain of nearly 100% over 1947, when 45,000 employees participated in that company. The treasurer of a well-known shoe company reported that, of his concern's 19,060 employees, 9,240 were in the Plan and had invested \$146,807.32 in Bonds via deductions during the preceding month.

Why promote it?

We all know how buying Bonds builds an individual's future security. But there are company benefits too! Nation-wide experience shows that Payroll Savings increases each participating employee's peace of mind—makes him a more contented, more productive worker. It reduces absenteeism, lowers accident rates, increases output, and improves employee-employer relations.

It's easy to boost participation

- 1. See that a top management man sponsors the Plan.
- 2. Secure the help of the employee organizations in promoting it.
- **3.** Adequately use posters and leaflets and run stories and editorials in company publications to inform employees of the Plan's benefits to them.
- 4. Make a person-to-person canvass, once a year, to sign up participants.

These first four steps should win you 40-60% participation. Normal employee turnover necessitates one more step:

5. Urge each new employee, at the time he is hired, to sign up.

Nation-wide experience indicates that 50% of your employees can be persuaded to join—without high-pressure selling. All the help you need is available from your State Director, U. S. Treasury Department, Savings Bond Division.

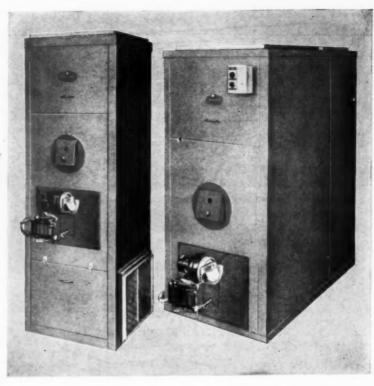
· The Treasury Department acknowledges with appreciation the publication of this message by

AMERICAN ARTISAN



This is an official U.S. Treasury advertisement prepared under the auspices of the Treasury Department and The Advertising Council.

CENTURY Convertible WINTER AIR



- More Sales for You...with Less Inventory!
- Two Sizes, Two Styles... Easy to Install and Convert!
- Ideal for Most Homes, with or without a Basement!

Yes... more sales from a smaller stock-on-hand—with Century's remarkable new GAS/OIL "Convertibles"! Inter-changeable Century burners enable you to sell five ways... with just two models. The Convertible Hiboy, with a new Century power-vaporizing oil burner has a bonnet rating of 60,000 BTU, and the Loboy—basement model—80,000 BTU. (Loboy also available with guntype high pressure burner—80,000 BTU at bonnet.)

CONDITIONERS

When equipped with the Century Gas Burner, the Hiboy has an input rating of 60,000 BTU; the Loboy—basement model—100,000 BTU. The Century gas burner is the stainless steel ribbon type . . . with controls AGA listed and approved. The Century power vaporizing burner operates efficiently at only .02" of stack draft (making it especially suitable for homes with low, small chimneys). Write today for full information!

FOR PROSPECTS BUILDING TO SELL

Contractors and builders add a powerful selling feature when they install "Convertible" "automatic heat. The prospective home buyer can switch from one fuel to the other at nominal changeover expense.

FOR PROSPECTS BUILDING TO OCCUPY

Century "Convertible" provides clean, quiet, fully automatic heat at low first cost, low operating cost . . . and the home owner is free from worry about a "squeeze on price or availability of fuel he uses . . . he can switch to gas or oil as the occasion demands!

FOR PROSPECTS WHO WANT OIL HEAT

Century Convertible heat provides fully automatic winter air conditioning at an operating economy that will prove a revelation to everyone who thought automatic heat "costs too much" . . . small and medium size homes —with or without a basement.

FOR PROSPECTS WHO WANT GAS HEAT

Sell Century Convertible heat to those who want gas heat where gas is not yet available. They can enjoy fully automatic oil heat "while they wait", or during periods of low gas pressure. When gas is available you can quickly and easily replace the oil burner with a Century gas burner.

Write today for FREE ILLUSTRATED LITERATURE and full information



Century Engineering Corporation Coder Repids, Jewa

Please send Free Mustrated Literature on New Century "Convertibles" and information about a Century franchise dealership.

FIRM NAME

ADDRESS...

CITY___

STATE

ATTENTION C



EACH OF THE 1000 HOMES in the Richland, Washington, Housing Project has aluminum heating ducts throughout. Central

Service Company, Seattle, is the builder, J. Fletcher Lankton-John N. Ziegele, Peoria, Ill., Architects and Engineers.

Aluminum ducts cut installation and fuel costs in 1000 home project!

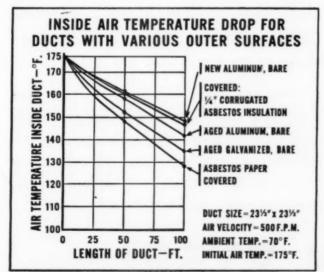
HERE'S HOW: Thanks mainly to reduced surface radiation loss, 5 to 30 per cent more heat is delivered through ducts of Kaiser Aluminum than through ducts of other materialseven though initial air temperatures are identical!

Result: Installation savings are possible through elimina-tion of insulation. And fuel consumption is cut because of lower required B.T.U. input.

These facts were proved in tests made by Aladdin Heating Corporation, Oakland, under the direction of a Professor of Mechanical Engineering and a Research Engineer of a major U. S. university. (Name of school on request.)

On the left, below, is a graph showing results of their tests. Note that new, bare Kaiser Aluminum is even more efficient than a far more costly material! And that aged, bare Kaiser Aluminum delivers only slightly less heat than the costlier material!

What's more, ducts made of Kaiser Aluminum are light, easy to handle, yet tough. During installation they mean less worker fatigue, less wear on shop equipment, fewer steps in handling. On your next job, specify ducts of Kaiser Aluminum!



THIS COMPARISON of duct materials proves why you should choose Kaiser Aluminum for all heating system ductwork!

Permanente Metals

PRODUCER OF

Kaiser Aluminum

you can cut duct in with Kaiser Alumin Consumer Service	(LET with complete specifications to show you have stallation costs and offer clients lower fuel cost um. Write for "New Conceptions in Ductwork." Dept. AA-7, Permanente Products Company
Kaiser Building, Oc	skland 12, California.
NAME	TITLE
FIRM	
ADDRESS	

Permanente Products Company, Kaiser Building, Oakland 12, Calif. . Sales Offices and Warehouse Distributors in principal cities.



Time to re-live a memory?

Somewhere in every man's memory, half-hid by the veil of time, there's a scene like this. If it wasn't the thrill of catching your first fish, it might have been the day you first swam alone, or the day you first pulled the trigger of a shot gun, with somebody else shouldering the stock to absorb the kick. Exactly what it was doesn't matter. It was an unforgettable moment in your life.

Summertime makes those memories live again. A man wants to go back to those carefree, sunny days when a quick tug on the line, the old swimming hole, or a brand new fielder's glove was the only thing that mattered. So, you take a vacation. And you realize again that those simple pleasures, with the workaday world behind you, are almost as good as ever.

When you take your vacation this year remember that Ryerson stocks are again large and complete—and that service is immediate. Just tell the boys who pinch-hit for you while you're away to call our nearest plant for every steel requirement.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK . BOSTON . PHILADELPHIA . DETROIT . CINCINNATI
CLEMELAND . PITTSBURGH . BUFFALO . CHICAGO . MILWAUKEE . ST. LOUIS . LOS ANGELES . SAN FRANCISCO



Readjustment-Not Depression

THERE ARE THREE WAYS OF LOOKING at present business conditions. The pessimist looks for the most negative and foreboding signs and convinces himself of the fact that business is heading into a depression. The optimist, at the other extreme, closes his eyes to changing conditions as business readjusts itself to competition in a buyers' market. Both are blind to realities. On the other hand, the realist faces new conditions as they arise and readjusts his business operations to meet them.

In spite of all the publicity about the newly arrived competitive business conditions, many contractors in the construction industry are indifferent toward the public demand for low cost housing. There is a vast market for housing but a large percentage has taken to the storm cellar waiting for lower prices. Some contractors are oblivious to an impending readjustment, have not yet experienced the new competitive conditions, and look serenely for a continuance of inflationary prosperity and prices. It's a case of not seeing the forest for the trees—not seeing the overall picture.

The buyers' market is here. Unemployment is increasing. Today there is competition for the sale and for the work which the sale creates. Prices are dropping. Some industries have already felt the slackening business pace, necessitating cuts in production and prices and increases in sales promotion.

But in spite of these weaknesses, there are vast markets which remain unsatisfied. Housing, for example, which contributes materially to the prosperity of warm air heating and sheet metal contractors, according to projected estimates will continue as an insatiable market for years. These estimates indicate that the housing market will contribute a basic stability to the nation's busi-

ness, provided costs are within reach of the average income. Most sources agree that there is a definite market for one million dwelling units a year for the next ten years. The rise in construction costs after controls were removed in 1946-47, caused many buyers to be priced out of the market; but in a market so vast, this situation has not been recognized by many building trades. An abundant backlog of business at high prices obscures the forest. However, demand for lower cost housing is evidenced in all construction indexes. Residential construction for 1949 is now estimated at 825,000 units compared with 931,-000 units in 1948. Building materials are in reasonably good supply and most prices have started to break. The F. W. Dodge Corporation reports in a survey that productivity per man hour has improved and that further improvement is expected.

The big question is whether the construction industry can reduce costs in an orderly manner and increase productivity during the present business readjustment. Fixed costs, such as freight, have placed a floor under many materials but the downward pressure is reflected in a general drop in the average cost of building materials. An overall drop of 10 to 15 per cent in construction costs is anticipated in 1949, 5 per cent of which has already been realized. Under present conditions, an orderly reduction in construction costs will not only keep pace with the market's ability to pay but will also stabilize business as a whole.

Realistic warm air heating and sheet metal contractors can contribute materially to this stabilization by giving the prospective home owner the greatest possible value for the dollar. This does not mean doing business at a loss. It means accurate estimating and engineering; standardization and efficient production of materials and fittings; and last, but not least, high productivity.



T IS, perhaps, inevitable that we should have at this time a Congress which generally is regarded as below the par of the average business man whom you meet in the luncheon clubs of any city. The composition of this body is a reflection of the confusion among those who sent the Congress here. There is no doubt that the general situation is critical. Yet we find in such a typical committee of the House as the Rules Committee, which can delay legislation interminably, that action on nearly all bills has been held up because the committee is evenly divided in three groups: four Dixicrats, four Democrats, and four Republicans. The situation is a striking reflection of the situation in the Congress itself. There are many fine, competent men and women in this Congress which roughly numbers 600. But those to whom you can apply the terms of competence and patriotism, in the fullest and most selfless sense, are definitely a minority.

Politicians Walk Tight Rope

Most of the members of Congress in both chambers are politicians in the narrowest and most conventional sense. They make their livings out of politics. It is no disgrace to be a politician, but the fact of being a politician usually connotes a certain mediocrity; it denotes a person who makes the practice of policy the essence of his activity. The practice of policy, in the sense of this discussion, is similar to the technique of a tight-rope walker: the politician keeps his ears attuned, and his perceptions sensitized, not to do those things he personally is convinced should be done, but to catch the whisper that will tell him what the most influential and the greatest majority may think should be done. The politician does not lead: he constantly seeks leadership. There is no particular opprobrium intended when it is said he is all things to all men. The very nature of his profession requires him to be an opportunist. He thinks his perpetuation in office depends upon truly appraising the popular and dominant trend. And patently that is the very essense of representative government as we have it. The representative must be a sounding board, without the courage to express his own convictions.

The trouble with this Congress is that it is very mediocre. Aside from the professional politicians, its membership largely consists of men and women with scant training in public or private business. They are almost always endowed with a native shrewdness, have a good instinct for public relations, can put on what

is known as a front, and have insensitive dispositions. They are talented back-slappers, have ready smiles, and are facile in covering their ignorance when they know little or nothing about a subject which requires thought and study. They often vote on subjects about which they have insufficient knowledge. They are usually people with limited horizons, and without unusual mental or moral stature. Regardless of personal opinions, it is apparent that there are few persons in Congress with the wisdom and the integrity of Senator Bob Taft.

You undoubtedly know that you give your Senators something that ranges between \$48,000 and \$61,000 a year. They draw \$15,000 as salary, and \$2,500 a year for expenses not accountable; in addition, according to the population of the State they represent, they draw from \$23,000 to \$36,000 a year to employ experts; and they are allowed another \$10,000 to hire an administrative assistant. It is not unusual for a relative to hold one of those fat jobs. When Representative Thomas of Pennsylvania was indicted for misusing the funds designed to employ help, and it was charged that he compelled his employees to kick back a part of their pay, there were anxious inquiries from numerous members of both chambers to discover whether the attack on Rep. Thomas was personal or if it was intended to assail the system. It is no secret here that it is common practice for a Congressman or Senator to ostensibly employ a wife, daughter, son, son-in-law, father, aunt, uncle, even cousins to the third and fourth generation, in order to keep the funds where they will do the member of Congress most good. It has practically hardened into an established and accepted custom which every one knows exists, but about which few comment. Each Representative receives an annual salary of \$12,500, and \$2,500 for expenses, not accountable. In addition, each Representative is allowed \$9,500 a year for clerical help, which, naturally, is frequently spent as described.

Is There a Recession?

The major problem facing this Congress is an economic one. It is not clear whether we are now in the grip of a major recession or merely experiencing a postwar readjustment. Apparently, the members of Congress prefer to ignore the whole matter. This tendency to avoid contemplation of a troublesome subject is scarcely a fault which is restricted to the members of Congress. Many of the rest of us are also doing

Washington Letter



2

it. Undoubtedly, if one were able to get into the private recesses of the minds of the members of Congress one would find that they think we might have a real recession of even far greater proportion than the historic debacle of 1929, if something is not done to modify the present process of deflation. The intelligent people in the Congress do not deny deflation is happening. They realize the stock market fluctuations signify uncertainty and fear: they are aware that steel production has been curtailed, and that manufacture of many products has been sharply cut. They know that most merchants have markedly decreased their purchases for inventory. Some luxury producers are reported to have reached the lowest ebb in sales in the commercial history of this country. Bank loans are reported to have dropped 10 per cent to 12 per cent the past six months. Farm business is healthier than almost any other business, and farm business is the barometer by which the Government economists read the immediate future. Unemployment, in June, had reached 3,500,000, which is not deemed alarming by the people of the Bureau of Labor Statistics. In the general, over-all sense, retail sales have held to the highest levels in units. Prices are coming down, and the more they drop the greater is the volume of sales. From every side the members of the Congress hear that there is plenty of reserve cash in the hands of the people, and that their income has not diminished to any extent. It is estimated that personal incomes have decreased between 11/2 per cent and 2 per cent since December. The most radical economists tell us that there have been pronounced slumps in the sales of men's clothing by large chains; that textiles, furs, books, wines, liquors, jewelry, perfumes, cosmetics, and other products have dropped from 20 per cent to 30 per cent in sales; that business failures are 70 per cent higher than they were a year ago. The more restrained economists here tell us that wholesalers' sales are down 10 per cent judged by last year's levels, and that manufacturers' sales are off 4 per cent. Retailers are buying actively, but they are buying in hand to mouth fashion and not building up inventories.

People Buy Necessities

In Congress they point out that the chief shrinkage has been in those lines which always are sensitive to the buying moods, and which have been losing sales for over a year. They also tell you that all reliable testimony in committees has reiterated that people

are buying the things they actually need in unprecedented volume. They do not actually question the steel production figures-reported off 12 per cent for 1949, but they make no bones about the fact that they suspect them. They feel possibly the figures are blown up, and very probably that such decrease appears supported by evidence, that activity in the construction industry is high and is expected to continue tremendously high. This work will be the provision of both residential and business structures, as well as great programs of plant and other industrial construction and rehabilitation. The great corporations themselves confirm the information in Congress that obsolescence is high, in buildings as well as plant equipment; and that the same holds true for the facilities and equipment of the public utilities. They stress they cannot proceed with rehabilitation until capital is in less jeopardy from deficit financing by bonds and added taxation. However, your Congressional observer will tell you that these corporations must either proceed with rehabilitation, or they will add momentum to the increasing impatience which will give the liberals the support for their desire to nationalize some industries and utilities. Your Congressional friends, moreover, suggest that the ECA program, with its billions to be spent upon products and materials and services to go abroad, will continue despite the apparent opposition in Congress.

(Please turn to page 166)



Frank P. Keeney, president, Keeney Publishing Company, left, receives award from Kingsley Rice, See EDITOR'S NOTEBOOK.

Here's Help For The Busy Contractor An Outside Bookkeeping Service

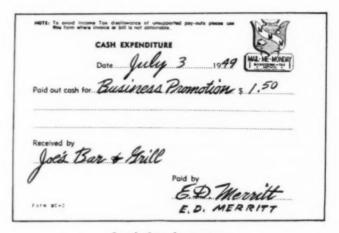
L. T. BRUHNKE Wauwatosa, Wisconsin

In Operating any type of business, adequate records are not only a good investment but are required by law. Businesses often minimize office work because its value is not realized, but, like flying in bad weather without instruments, it can be dangerous. While large concerns can afford an adequate staff, book work in small companies is apt to be an overtime job for the proprietor and income tax reports are often costlier because legitimate deductions may be forgotten. The income tax report requires a yearly profit and loss statement but yearly figures may come too late to correct operating inefficiency.

Elmer D. Merritt, a Milwaukee heating and refrigeration dealer solved his bookkeeping problem by turning it over to the local Mail-Me-Monday organization. As he says, "If I make one sale a month during the time I would be spending on the books, I can make enough to pay the entire cost of the service for a year." Instead of having to spend evenings doing book work, he merely puts paid bills, invoices, a salary record sheet and cash expenditure sheets in an addressed, no postage envelope and drops it in the mail box, about 5 minutes work. Thus Mr. Merritt is able to devote all his heating and refrigeration skill to his business while the Mail-Me-Monday staff contributes an equally specialized skill to the bookkeeping problem.

When asked about the results, Mr. Merritt said enthusiastically, "Well the results are many times as good as when I kept the records." While all bookkeeping is not done outside, the major part is dispensed with. Each bookkeeping contract is a tailored job to fit the conditions. Thus, Mr. Merritt keeps track of the Accounts receivable, and makes out his own payroll checks because with two employees, he can do it faster. However, the bookkeeping organization would do it all, if requested. The result of this service is that Mr. Merritt gets a current picture of how his business is progressing.

Each month, a profit and loss statement, similar to the one shown, is received. If a man does his own bookkeeping, press of other business is apt to prevent statements being made out, with the feeling that expenses are known anyway. While some monthly items can be remembered, it is easy to forget three year



Sample form for expense account expenditures

items like insurance or underestimate how large certain expenses such as entertainment are. With an accurate monthly profit and loss statement, an analysis can be made to correct any situation out of balance before large losses are incurred. By receiving one every month, they are available for comparison and analysis.

When the bookkeeping service was called in, the Merritt books were three months behind and income tax time was approaching. The contractor merely turned over all his records to the bookkeeping service and his books were brought up-to-date and the tax report made out.

While this service does not guarantee to lower income taxes, Mr. Merritt found their knowledge of legitimate deductible expenses superior to his own. In his case, about \$1,500 worth of deductions were found which probably would have been missed if he had been doing his own bookkeeping. Travel and entertainment expense, permit expenses, miscellaneous expenses and refunds to customers were among those which might not have been fully allowed for.

A lot of refrigeration business is accounted for by taverns and to get it, it is necessary to drop in occasionally. If even as little as a quarter is spent, it is a

JOHN DOE HEATING & VENTILATING CO.

Profit & Loss Statement January, 1949

January, 19	49	
INCOME: Net Sales		\$4,026.48
COST OF SALES:		4.70201.0
Inventory 1/1/49	\$2,856.43	
Purchases	2,497.62	
Wages Outside Labor	503.15 296.79	
Total	\$6,153.99	
Less: Inventory 1/31/49	2,932.81	
COST OF SALES		3,221.18
GROSS MARGIN ON SALES		\$ 805.30
OPERATING EXPENSES:		
Operating Supplies	\$ 9.77	
Freight, Express, and Postage	4.16	
Rent	75.00 14.23	
Telephone and Telegraph Gas, Electricity, and Water	9.48	
Heating	23.17	
Advertising	121.85	
Travel and Entertainment	16.25	
Social Security Taxes	5.03	
Personal Property Taxes	35.00	
Car and Delivery	22.83 25.00	
Legal and Professional	20.00	
Permits	10.50	
Insurance	29.07	
Depreciation	20.00	
Miscellaneous Selling Expenses	4.10	
TOTAL OPERATING EXPENSES		445.44
NET PROFIT FOR PERIOD		\$ 359.86
NON-OPERATING EXPENSES:		
Equipment	\$ 87.70	
Fixtures	12.25	
TOTAL NON-OPERATING EXPENSES		\$ 99.95

legitimate deduction. If a lump sum, estimated at the end of the year, is put in, the chances are it will not be allowed. But if, when the money is spent, an MMM expenditure form is made out showing the date, kind of expense, and who got the money, it will be recognized by the income tax authorities. In the Merritt case, these are filled out daily and mailed weekly. Such expenses can vary depending on conditions, and the monthly p&l statement shows total expenditures.

Tax Records Kept

The MMM organization knows the income tax requirements and keeps track of expenses on a deductible or non-deductible basis. Thus at the end of the year, the income tax is relatively simple. However, if the proprietor keeps his own books and does not acquaint

himself with legitimate deductions he may have to go thru a year's entries to find deductible expenses.

Government Forms Handled

Another service performed is filling out all government forms such as social security, withholding tax, state and federal income taxes, personal property tax and any new ones which may be prescribed. Thus, instead of studying the forms, calling the bureau and wondering if they are filled out correctly, all Mr. Merritt has to do is to sign and mail them.

Most cities have bookkeeping services similar to Mail-Me-Monday. They have varying methods and charges. By hiring such a service, the dealer can devote his technical skill to his business rather than to take time out to do the bookkeeping.

Simplified Wage Records

The past fifteen years have seen a tremendous growth in the amount of bookkeeping required for each employee on the payroll. Federal and state laws make these records mandatory and the contractor should be familiar with the requirements. The necessary records are simplified in this article.

THE envelope bore a Maryland postmark, and in place of a stamp it carried the penalty frank signifying that it was official government mail going through the postal routine without the need for stamping. Nervously, the *Indoor Comfort* dealer fingered it. Finally, he slit the top of the envelope and pulled out a slip of onion skin paper bearing a printed form. Then he exploded.

"Look, Fred," he called to his assistant, "these government agencies expect us to give them a social security number from eighteen months back! Why don't they give us any peace? We're not government accountants. This girl got married and left here a year ago; now I've got to dig around and see if we still have her social security number. If we do, it'll be a miracle. I don't even know where to begin looking for it."

Payroll Records Are Complex

That is no isolated instance. Today, with employer's responsible for the collection from their employees' salaries of withholding taxes and social security payments, and with assorted state and Federal agencies insisting upon an accounting of where the wage dollar was spent, the keeping of accurate, easily-found wage and salary records is more than a must, it is a requirement of law.

The contractor needs this sort of record for successful operation. You should know, and be able to find speedily, how much was paid out to employees during any given period, and where and to whom the money went. But surpassing even this in importance is the legal requirement of both state and federal wage and tax statutes that the business man not only keep records, but also maintain them where they are easily accessible for inspection by government men.

Faced with this situation, what is the *Indoor Comfort* dealer, who is seldom as skillful at solving accounting problems as he is at unraveling sales knots, to do? How can he keep the records simple, and at the same time, make them as accurate as a finely-tooled precision machine? Actually, keeping such wage and salary records can be exceedingly simple. First, consider what information should be obtained by looking at the records. They must reveal:

The amount of the gross salary, wage or bonus. The

gross figure here is the sum due the employee before anything has been deducted. It isn't the net, or takehome, figure.

The amount of income tax withheld from the gross

The Federal social security payments taken out.

The state social security withheld from the salary. In some states, this is paid entirely by the employer; in others, it's paid jointly by the employer and the employee. In a few, you're not liable for it unless you hire a certain minimum number of employees. To secure accurate information on this, consult the local headquarters of the state revenue department.

The amount of state social security payment which you provide. Again, whether or not this is paid depends upon the laws of the individual state. Check with the state revenue department or the state tax collector.

Other withholding items. Many Indoor Comfort dealers make a practice of deducting in installments for Community Chest and Red Cross contributions, as well as sums for other worthy causes, as a service to the civic drives, and as a convenience for the employees. These sums and any other deductions come under the heading of "Other items."

The employees' social security numbers.

How to Keep the Facts

These, then, are the facts that good wage records show at a glance. How can you enter all of these diverse things without getting into complicated accounting? Illustrated is a simple form on which all of these things can be listed rapidly. If this record is kept faithfully, the result will be a set of wage and salary records that will not only tell all the facts about the wage items on the profit and loss statement, but will give the information necessary for filling out quarterly and year-end social security and withholding tax returns as well. Here is how it works:

In the first column, enter the worker's name and his social security number. It is important to have the social security number on every pay sheet, because in this way it will always be available when you need to look it up for filing returns, or to answer a government bureau's questions. In the second column, enter the

gross amount of the wage, salary or bonus paid. In the third column, enter the withholding tax (income tax) you are required to deduct. If in doubt as to the amount, consult a handy book of tables that the local Collector of Internal Revenue will be glad to furnish without charge.

The fourth column contains the sum held out for Federal social security. This is figured at 1 per cent of the employee's pay, regardless of the state in which you operate. In the fifth column, enter state social security withheld from the pay. In many states, you'll

have no need for such a column on your pay record, since the state benefits are paid entirely by the employer. In the sixth column, put down the amount you must pay for the employee's state social security benefits. Here, too, you may not need such an entry, since not all states require employers to contribute unless they have a certain number on their payrolls. Next, enter any other withholding sums kept back from the employee's take-home pay. Red Cross and other contributions come under this heading.

To arrive at a figure for the last column, add together all of the deductions, state and Federal social security, withholding tax, and any miscellaneous withholding items, and subtract the total from the figure in column two (the gross wage amount). This gives the net wage for column eight. This is the employee's net earnings for the period. Finally, total each column at the bottom of the page.

Records Make a Difference!

Let's look again at the *Indoor Comfort* dealer described at the beginning of this story. Say that he has kept a wage and salary record such as described here. What will he do when receiving such a request?

In the first place, it isn't likely that he will explode, because the chances of the Federal agency coming back for a forgotten social security number are now slim. The likelihood is that the number was duly entered on the form in the first place. But if the *Indoor Comfort* dealer did neglect to put it down, he would probably say something like this to his assistant:

"Say, Fred. The government's requesting a social security number on Jane Doe, who worked here about a year ago. Bring out the wage records for the third quarter of 1948, will you, and look up her social security number. You will find it on any of the pages entered for her. We'll send this information back to the government today."

Some accountants recommend a slight variation of this form. The main difference between the two

NAME AND S. S. NUMBER	GROSS WAGE	WITH ING.	FEDERAL S. S.	STATE S. S. DEDUCTED	STATE S.S. WE PAY	OTHER ITEMS	WAGE
	+		_				-

PAY PERIOD ENDING

TOTAL

forms is that, in the first one described above, you enter all of the pay roll items for a given pay day on one sheet. Everybody is listed together. In the second variation, all of an employee's pay roll records for a quarter are kept on a page, with a different page being filled out for each employee. In other words, one system groups together all of the employees under a single record which shows the totals paid on a single pay day.

The other wage record gives all of the data on one employee for a thirteen week quarter (or even for a year, if a 52-week ruled sheet is prepared). Which is better? That depends upon individual preference. Both are handy, simple, workable wage record systems. Here's how the second variation works:

The Alternate Method

At the top of the page, enter the employee's name and home address and, on the other side of the sheet, his social security number. Then rule the record sheet in eight vertical columns, with the pay day date being entered in the first column. The list of employees' names has been omitted and the pay day date substituted. To enter the wage records, follow the identical procedure used with the first form, inserting the date on each pay day. The same form is used for thirteen, twenty-six, or even fifty-two weeks.

When the time comes for filing quarterly social security and withholding tax returns, either of these forms gives all of the data needed. A quick glance over the forms, and a few minutes' work transferring figures with a pencil, and the form-filling work is done.

It is a wise idea to retain these records. The law requires that you not only maintain, but that you keep, the wage records for possible inspection if Federal or state agents want to look them over. How long should they be kept? Accountants say that you should retain these wage records for as long as you can, and for an absolute minimum of six or seven years.

How to Figure the Advertising Budget

DAVID MARKSTEIN New Orleans, Louisiana

Many contractors feel that advertising is essential to the continuation of their business and yet they are not sure how much they should allot for it. Here are some easy rules to apply to any business to determine what the advertising budget should be.

HOW much should I spend for advertising? Should I spend a fixed lump sum, or should I set aside a certain percentage of the volume sales? If so, what lump sum? What percentage of sales should be spent for advertising?

These are questions which many heating contractors ask themselves. There is no flat answer, no magic formula that will cover every situation and provide every heating contractor with constantly increasing sales from a slide rule figure.

How much you spend for advertising depends upon your own situation, your business, your customers, and many other factors. There is no magic formula, it's true; but there is a way in which you can plan an advertising fund that exactly fits your situation.

Seven Basic Principles

Seven guide posts will tell you how much your company should allot for advertising, and how much it is good business policy for you to spend. You can discover the guide posts by asking yourself seven important questions. They are:

1. What is my sales volume? Only men inexperienced in intelligent business operation set their minds upon lump sums that should be paid for advertising. It is better practice to spend what your company can afford. General Motors Corporation can afford a vast sum yearly for advertising and public relations, but this sum is arrived at in the same manner that wise heating contractors arrive at their advertising appropriations: It is a sum that General Motors can reasonably spend without wrecking the business.

Advertising is a very necessary thing, as well as a highly desirable selling tool. But you cannot spend more than your company's sales volume will justify. You cannot do it for long, without going bankrupt.

2. How much do I expect to sell during the coming year? Every business man sets his sights upon a definite aim at the beginning of each year. If he's practical, he sets a quota that he can logically expect to meet. Beginning with a \$25,000 yearly volume, it is hopeful folly to decide that you're going to gross \$100,000 in the next year. Ninety-nine times out of a hundred you won't. But you might logically expect to increase the volume to \$35,000.

The job you want to do determines to a very large extent the amount of advertising money you must spend to do it. If you want to build a \$100,000 volume, you'll need more advertising than if you want to gross \$35,000.

After a quota is set, decide from a study of past advertising effectiveness just what is needed to produce that volume. If the quota you've set will require more advertising money than you can afford to spend, lower the quota so that advertising expenditures will not damage your capital.

3. What does my last year's profit and loss statement show? Heating contractors who are good business men keep complete breakdowns of all their company expenditures on what accountants call a profit and loss statement. This is a statement that shows gross volume, gross profit, and, item by item, overhead expenses. Advertising, which is nothing more than a method of selling, is one of these overhead expenses.

A good profit and loss statement not only breaks down the dollar expenses, but expresses them in terms of percentages of the volume as well. In other words, if a heating company's volume last year was \$100,000, and the owner spent \$3000 for advertising, then his profit and loss statement will tell him not only that \$3000 was spent for mass selling, but that his advertising cost 3 per cent of his company's volume.

Knowing the percentages that you have spent in the past, you can go over the profit and loss statements with an eye to helping you determine how much you can profitably spend in the future. Let's say again that last year's advertising cost was 3 per cent of volume. If your profit was larger than you expected, you know two things: One is that your advertising is producing results. The second is that 3 per cent is a good, profitable appropriation to spend.

On the other hand, if the profit and loss statement shows that you spent only 1 per cent last year for advertising, you can probably see your way clear to a larger appropriation this year (if the profits warrant it, of course), thus making possible considerably larger profits for the coming period.

4. What do I want my advertising to do? Some heating contractors want institutional advertising sell-(Please turn to page 168)

What Is Today's Dollar Really Worth?

ARTHUR ROBERTS

Pompton Lakes, New Jersey

 ${f M}^{
m ORE}$ than one *Indoor Comfort* dealer has asked us, "When the value of today's dollar is taken into consideration, how much profit am I really making and where do I stand financially compared to prewar years?" We find from our field work that there is more than a passing interest in this subject. Here we will discuss its ramifications so that the reader

can consider his own case intelligently.

Even though prices are dropping, one dollar of prewar days is worth only about 60 cents on the basis of our over-all economy, and this exchange rate, whatever it happens to be at a given time, should be the basis of calculation when appraising business figures. Whether we drift into a permanent buyers' market or the sellers' market revives, the customary practice of considering the dollar as fixed in value prevents a contractor from viewing his financial standing and income in the right perspective. Based on a dollar of 60 cent value, the dealer who earned 6 per cent on sales in prewar days, should earn 10 per cent today to make comparable dollar profits on the same sales volume. The dealer who earns about the same percentage of net he earned in prewar days should realize that this net is in 60 cent dollars, that the tax is much higher than in prewar times, which further cuts the value of the dollar profit although this reduction is indirect.

The 60 Cent Dollar

The balance sheet accounts should be considered in the same light. Cash is in 60 cent dollars, hence, it should be 662/3 per cent more than in prewar times. In other words, to get equivalent buying power, he should have \$1,000 for every \$600 he had before the war. If the dealer gives credit, the accounts receivable should be appraised in similar manner. For every \$600 in receivables carried before the war, the dealer can now carry \$1,000 and maintain prewar efficiency on credits and collections. If receivables show a smaller increase he is doing a better job on credits and collections. Inventory may have increased in similar proportion and not indicate an overload in inventory invest-

If the current assets, cash, receivables and inventory, should be higher in proportion to the reduction in dollar value, this means that his working capital, the difference between the current assets and the current liabilities, should be proportionately higher than in prewar days. If the dealer is carrying fewer obligations to offset the differential, he may manage with approximately the same working capital as in prewar times, but, in most cases, this isn't likely. In fact,

because of the decrease in dollar value, the dollar buys less, and so, the dealer must pay more dollars for what he buys, and this tends to increase the current liabilities so that his working capital should be at least 66 2/3 per cent more than it was in prewar days. He may have to raise this figure if his current obligations average more each month than they did before the

Let us consider fixed assets. They are worth only 60 cent dollars, which means that to replace prewar assets today it is necessary to pay 66 2/3 per cent more dollars. If depreciation has been charged off on the basis of prewar estimates, there will be too little in the reserve accounts because new operating equipment must be bought with 60 cent dollars. A shortage in the reserve account means that the net worth must be charged with the difference, and so, it is really less than it appears on paper. Many dealers are in this category. They haven't enough in their reserve accounts to cover the purchase of replacement equipment, when the old is written off for new.

Equipment Reserves Increase

Big industrialists, sensing this spectre, have increased their reserves about 30 per cent to offset the reduction in the purchasing power of the dollar, and as inflation moves upward, they are increasing their reserves to take care of subsequent re-valuation. It is doubtful that the Treasury will recognize this as a good reason to write off more depreciation on the income tax return, but it is wise business from the standpoint of conservative accounting. In some cases, businessmen contend that if they had to replace old equipment for new today they would have to pay three times the prewar price. In this event, an increase in the reserves for depreciation to take care of the reduction in dollar value would not be enough to cover the cost of the new equipment and these businessmen would have to decrease net worth by a substantial sum.

Now, let's discuss the liabilities. It is obvious that if the dollar is worth 60 cents, the price of goods and services that the dealer buys, in most cases, will have increased accordingly unless he has cut expenses. If he has been operating in prewar years and since at minimum expense, then his current liabilities will be more in dollars than they were in prewar days. The 60 cent dollar is the yardstick. His current obligations should not exceed 662/3 per cent of prewar figures. otherwise, he is probably passing up discounts or is slow pay, indicating a weak working capital position. He hasn't made an attempt to maintain the same liquidity of working capital that he had before the

war. Inflation weaves an intricate web around business operations and it pays to give some thought to this relationship in order to conduct your affairs so that the variation in dollar value will give you a minimum of trouble.

Short-term loans, which are current liabilities covering a year or less, do not go back to prewar days. As inflation increases, all other things equal, it is easier to pay off short-term loans because you pay with cheaper dollars. It is said that Hugo Stinnes, after World War I, acquired tremendous holdings in Germany by contracting to buy up plants on credit, then he waited until inflation moved upward and paid off his obligations with inflated marks.

Pay Debts Now

Fixed liabilities, if incurred before the war, will give the dealer a break in this inflationary period, providing he pays them off when the dollar is cheap. If he holds them until the dollar bounces back, he is gaining nothing. As in physics, the reaction is in direct ratio to the propulsion of an object, so the higher inflation soars, the bigger the swing eventually to the other extreme, in which case, the dealer may find that a fixed liability, incurred in 1939, we'll say, if not paid before deflation completes its cycle, may have to be paid with dollars much harder to get than they were when he incurred the long-term mortgages. Try to pay off these long-term loans now, if you can arrange it.

Net worth is also affected. The dealer with \$30,000 net worth before the war should have about \$50,000 now. Even if he has a \$50,000 net worth now he hasn't actually improved his financial standing in 10 years. The dealer is faced with just as much trouble if deflation continues. From the looks of things, a buyer's market is now on the way. If so, it poses a different problem.

If the dollar goes up in value, your cash in bank will be worth more, and so, a good cash position is desirable during this inflationary period. Accounts receivable will be in the same category, if you can collect them all. If the dealer has any money due him personally or due his business, he should see that the debtors pay when due. During the early 1930's many merchandisers had to write off large sums in bad accounts because the debtors could not pay them when business slipped

into the lower brackets and their incomes were reduced. For this reason, it pays to get your money today—even in 60 cent dollars.

Inventory is another asset that may be bloated if deflation sets in. This means a write-off to net worth. Supply is abreast of demand in many fields. Keep the inventory down to an amount consistent with maximum volume and maximum profit. Inventory is an asset that will deflate in ratio to the increase in dollar value, so keep a check on the capital invested in stock and the turnover.

Fixed assets, too, will decrease in value. If you purchased during the inflationary period, it will decrease in value during the deflationary period, and the loss should be charged to net worth. The value of business properties purchased during the inflationary period may have to be revised downward. A business property bought in prewar days will probably not be affected unless the dealer has been foolish enough to appreciate it on his books to reflect the 60 cent dollar. In this case, he'll have to revise his figures downward. If deflation sets in, many dealers may be obliged to write down their assets, or they will be carrying water on their balance sheets. You can't write down the liabilities carried over from an inflationary to a deflationary period. The current liabilities will be harder to liquidate, and so, keep them down.

Look Behind Figures

Today, of all times, one should not consider the figures on the profit and loss statement and balance sheet from the sole standpoint of mathematics. Go behind the figures to determine whether operating ratios are satisfactory, whether the elements of income and outgo are in keeping with experience figures gathered in periods of efficient management. But that isn't all. In this crucial period, the value of the dollar must be considered also. It the dealer expects to maintain a strong financial position and avoid heavy losses when deflation comes he should view his business statements in the light of the 60 cent dollar and what the dollar may be worth tomorrow.

Everything that goes up must come down. The end of the inflationary spiral and declining prices will put the squeeze on all businessmen unless they take soundings of their position now.

N.L.R.B. Rules Hiring Practice Illegal

THE National Labor Relations Board has unanimously ruled that a "referral and hiring" arrangement by which a building trades contractor employed only members of the A.F.L. Carpenters Union is illegal under the Labor Management Relations Act. The Board ruled that the arrangement violated the Act's closed-shop ban.

It was the first ruling by the Board on the legality of hiring practices in the building and construction industry under the Taft-Hartley Act.

Accordingly, the Board ordered the contracting firm to reimburse seven men for any loss of wages they suffered because they were refused jobs on the project when they were unable to obtain clearance for employment from the Decatur, Alabama, local of the Carpenters Union. The men were members of Lodge

1500 of the International Association of Machinists (unaffiliated), which filed the charges.

The Board rejected, as a defense of the company's refusal to hire the seven, a contention by the company that this method of hiring is the "custom and practice" in the construction industry. The Board said:

"That argument should properly be addressed to Congress and not to this Board. * * * It is our duty as administrators to enforce the law as written, and not to pass upon the wisdom or practicality of its provisions. Congress has made unlawful the hiring practices followed by the Respondent. We have no authority to engraft exceptions upon the Congressional enactment because this now unlawful practice was sanctioned by custom in this particular industry before 1947 or may be thought economically desirable or necessary."

NEWS SUMMARY OF THE MONTH

ASH&VE Summer Meeting

THE 1949 SEMI-ANNUAL MEETING of the American Society of Heating and Ventilating Engineers was held in Minneapolis, Minnesota, June 20 to 22. Scene of the sessions was the Nicollet Hotel and papers were presented which dealt with various phases of air conditioning.

First technical session on Monday, June 20, opened with a paper developed by Norman A. Buckley and Robert W. Roose which discussed the performance of a blower used with a furnace. Another subject in the warm air field was "Pressure Loss and Air Flow Characteristics of a Box Plenum" by S. F. Gilman, R. J. Martin, W. R. Hedrick and S. Konzo. A golf tournament and other sport activities occupied the afternoon.

Tuesday morning's technical session was devoted to the heat pump and the first paper offered the opinion that it is not always economical to heat homes by pumping heat out of the ground without returning it. This conclusion was made from studies of the earth as a heat source or storage medium for the heat pump.

Professor A. B. Algren, University of Minnesota, presented a paper on ground temperatures as they are affected by weather conditions. His research established that there is a time lag of three months at a depth of 16 ft. In other words, the ground at that level was warmest in November and coldest in April. This data is useful in planning heat pump applications.

At Wednesday morning's session one of the papers was titled "Heat Gains Are Not Cooling Loads," and was the work of C. O. Mackey and N. R. Gay. This study indicated that all the heat, or energy, given off by lights, appliances, people, warm surfaces and sunlit glass need not be removed from a room by the air conditioning system. Cooling loads are calculated as if all this energy from these sources found its way into the air immediately, but this is not the case.

The banquet Wednesday evening brought the meeting to a formal conclusion.

Steel Production Declines

Steelmaking furnaces operated at 84.4 per cent of capacity during the week of June 20. Excluding declines caused by strikes, holidays or the process of reconversion at the end of the war, it was the lowest weekly percentage rate in nine years, according to American Iron and Steel Institute. The scheduled output was equal to 1,555,900 tons of ingots and steel for castings.

In 14 weeks the national steel operating rate had fallen 17.6 points from 102.0 per cent of capacity in the week of March 14. The amount of raw steel scheduled to be made the week of June 20 was 324,500 tons below the output of 1,880,400 tons in the record week in mid-March.

When those two rates are compared upon an annual basis, the total decline over the course of a full year is nearly 17,000,000 tons.

The high production in the week of March 14 was the climax of a ten-week stretch of operations at 100 per cent of capacity or better.

Construction Costs Decline, Value Rises

Two dissimilar trends mark the overall construction picture today. Cost reductions are being attained in the erection of large-scale housing projects, while the total dollar-volume of construction is moving toward a record new high. Stepped-up competition among building contractors in bidding for jobs, and use of new building designs and methods have been given as the cause of the cost decreases. One example of this is furnished by a Milwaukee housing project on which bids were \$1 million less than estimated and \$3459 lower per unit than comparable 1948 projects even though units in the new project have slightly more space. Competitive bidding was cited as the reason for the decrease in price.

The possibility of a new construction dollar-volume record of \$19 billion is indicated by joint estimates of the Departments of Labor and Commerce. Although this represents only a slight increase in dollar volume over the \$18,775 million total for 1948, it reflects a slightly larger rise in physical volume in view of declining trends in costs and profit margins, plus a probable improvement in productivity. This total results principally from expansion by privately owned public utilities, and the growing importance of public construction, financed mainly by state and local governments.

Private nonfarm homebuilding is expected to remain at the \$6,500 million level earlier anticipated but large expenditure gains are predicted for private non-residential construction, mainly churches, hospitals and institutions, and recreational facilities.

SMA Convention

THE 32nd annual meeting of the Stoker Manufacturers Association, national organization of manufacturers of automatic coal burning equipment, was held at French Lick, Indiana on June 13 and 14, with 100 officials and representatives of prominent stoker manufacturing, supply and allied firms in attendance. The convention discussions featured some of the problems faced by business enterprises under current conditions. Special attention was paid to methods of adding to sales power in the stoker industry, in order to bring the stoker sales curve up from its present low levels.

In reporting to the members on the activities of the association during the past year, President Claude A.

Potts, Lebanon, Indiana, stated that smoke abatement and air pollution activities constitute one of the major phases in which the stoker industry can contribute to the benefit of the public, and that the many cities which have adopted or are now in the process of establishing new anti-air pollution ordinances make it imperative that stoker engineers and distributors work closely in efforts to help clean up the atmosphere in numerous cities in all parts of the country.

The fuels situation came in for considerable discussion with general agreement that plentiful supplies of gas and oil, together with declining fuel oil prices and aggressive merchandising efforts on the part of gas utilities and equipment manufacturers, spells keen competition between the manufacturers and purveyors of equipment and all fuels. The American public, it was concluded, will be the net beneficiary of these combined efforts to supply more and more homeowners with automatic heat. Representatives of the coal industry who attended the meeting outlined the sales promotion, merchandising, and research programs which both the Bituminous and Anthracite producers are pushing in efforts to retain and increase both domestic and commercial heating markets for solid fuel.

Prominent Speakers

Convention speakers were: Dr. R. C. Johnson, vice president in charge of research, Anthracite Institute, Wilkes-Barre, Pa.; C. L. Farris, acting director, Construction Materials Div., National Security Resources Board, Washington, D. C.; Carroll F. Hardy, chief engineer, Appalachian Coals, Inc., Cincinnati, Ohio; W. S. Major, development engineer, Bituminous Coal Research, Inc., Pittsburgh, Pa.; J. H. Carter, Commissioner of Smoke Regulation, St. Louis, Mo.; and. Carl E. Miller, technical adviser, Battelle Memorial Institute, Columbus, Ohio.

Claude A. Potts, vice president, U. S. Machine Corporation, Lebanon, Indiana, was re-elected president and chairman of the board for the ensuing year. C. T. Burg, vice president in charge of sales, Iron Fireman Mfg. Company, Cleveland, Ohio, was elected vice president, and C. P. Meredith, executive vice president, Steel Products Engineering Company, Springfield, Ohio, was re-elected secretary-treasurer.

Marc G. Bluth, Chicago, was re-appointed executive secretary.

Start 95,000 New Dwelling Units in May

Homebuilders throughout the nation started 95,000 new permanent nonfarm dwelling units in May, Secretary of Labor Tobin announced in releasing the Bureau of Labor Statistics May figures on housing starts. "This is 9,000 more than were put under construction in April and is within 5 per cent of the record 100,300 units put under construction in May 1948," Mr. Tobin said.

Preliminary estimates show that builders have started 343,400 new dwelling units in the first 5 months of 1949. Although housing starts in 1949 have dropped as compared with last year, the gap between production in 1948 and 1949 is lessening as the 1949 building season progresses.

Last year, the number of local building permits issued for new housing reached peak in April, with the actual start of construction reaching an all-time monthly peak in May. This year, building permits for planned new housing were still on the uptrend in May. Thus, the peak in housing starts will probably occur later this year than last.

May expenditures for all new construction rose 15 per cent from April to \$1.6 billion. Almost half this increase occurred in expenditures for new private residential construction. Contract construction employment rose at the same time by 73,000 to 2,010,000. The Department pointed out that both expenditures and employment may be expected to rise further as construction activity reaches its seasonal peak in the summer.

Production Speeded by Welding



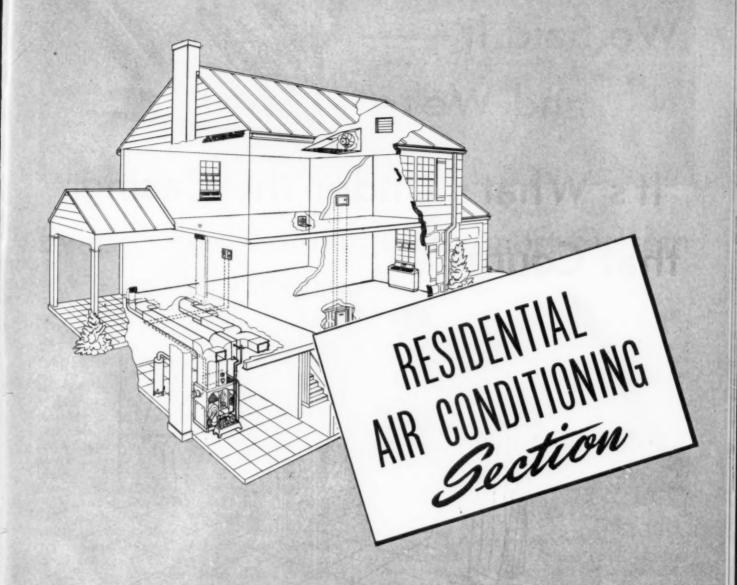
Welder unites two big coils of sheet steel to speed up production at Gary, Ind., Sheet and Tin Mill of Carnegie-Illinois Steel Corporation. Installation of two of these 700-KVA welding machines in continuous pickling lines is one phase of this United States Steel subsidiary's improvement program.

Longer coils, weighing up to 15 tons, reduce the number of stops and starts in rolling and finishing operations. Higher yield is also obtained by cutting down on "off-gage" ends. The welder forces trimmed ends of coils together under heavy pressure and applies heavy electrical current to fuse and join them. The resulting seam is then shaved down to the normal thickness of the sheet and side-trimming shears remove outer-edge projections.

Exposition in Dallas

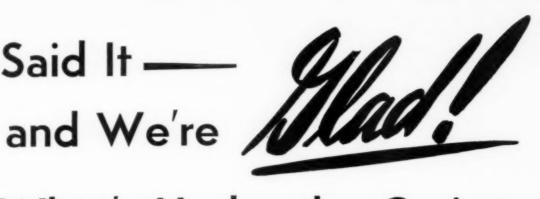
THE spotlight will be on Dallas, Texas, from January 23 to 27, 1950, when the American Society of Heating and Ventilating Engineers will sponsor the Southwest Air Conditioning Exposition of the International Heating and Air Conditioning Exposition. This event is to be held in conjunction with the 56th annual meeting of the ASHVE. Space already engaged indicates a well-rounded display that will include every

(Please turn to page 144)



INDOOR COMFORT - IN ALL SEASONS
FOR HOMES AND SMALL BUSINESSES

We Said It ---



"It's What's Under the Casing



We're glad that years ago we started saying "It's what's under the casing that counts" because with this constantly before them the engineering and production departments here at Waterbury have redoubled their efforts to make sure that what's under the casing is as perfect as it is humanly possible to make it - and right up to date with the latest advances in warm air heating.

We're glad, too, that we have said it to the general public because we have gotten Mr. and Mrs. America really interested in what's under the casing of the furnace they put in their home. We want them to be interested because we feel sure that if they carefully look into this matter there can be little doubt that their choice will be Waterbury.

Yes, we said it and we're glad! "It's What's Under the Casing that Counts."

THE WATERMAN 1122 Jackson Street N. E.



WATERBURY CO.

Minneapolis 13, Minnesota



Evaporative Cooling By Exhaust System

JOHN L. PARKER Scottsdale, Arizona

E VAPORATIVE cooling is probably the oldest form of cooling devised by man. The mechanical, evaporative coolers used so extensively in the Southwest in recent years, to make the long burning summers more bearable, stem directly from more primitive applications of a natural process.

The early Mexicans devised a clever form of evaporative cooling called Olla. The Olla was an earthen jar used to store drinking water. It was made of porous baked clay, porous to allow water to seep through. As the water came to the surface it evaporated, cooling the jar and keeping the water cool and palatable.

Pioneers copied the principle of the Olla when they built food coolers consisting of an open frame with shelves along the sides. Over the frame they tacked burlap and on the top they placed a pan with small holes punched around the bottom edge. This allowed water to seep down the burlap and keep it moist. When placed in a breezy spot, the wind blowing through the damp burlap caused evaporation which cooled the food on the shelves.

Application to Homes

With the building of permanent homes in the hot, arid Southwest, this crude food box and cooler was made more elaborate. Then, someone got the idea that by placing similar apparatus in a window of his home he might be able to cool a whole room. Later, other builders of these homemade coolers began using the family fan to draw air through the wet pads and force it into the room.

During the past fifteen years, manufacture of evaporative coolers has become a thriving industry in the Southwest, with plants of varying sizes manufacturing coolers from Fresno, California, to Dallas, Texas. Phoenix, Arizona, has long been a leading production center and 43 of 55 cooler manufacturers in the country are located in Arizona.

Evaporative coolers are now an all-metal product with the exception of replaceable fibre cooling pads which are used to moisten the air. Centrifugal blowers have largely replaced fans as the medium for drawing the air through the moist pads and forcing it into buildings, usually through ductwork in the attic and individual grilles in the rooms.

The basic principles of evaporative cooling are fundamentally natural. They work with considerable effectiveness in the great semi-arid belt which girds the globe and creates a common problem to such dissimilar areas as the great American Southwest (including much of Northern Mexico), Australia, all of the Middle East, Egypt, all of the high desert plateau of Africa, and around to the endless reaches of the Argentine pampas.

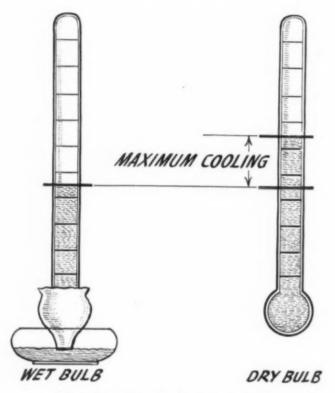
Evaporation Absorbs Heat

This method of cooling is based on the ability of water to absorb heat as it changes from liquid to vapor. The cooled air resulting from this process is then forced into buildings by pressure blowers. The lower the relative humidity of the incoming outside air, the greater the cooling by evaporation and the temperature differential between supply air and room air becomes greater. This can be explained by describing the principle of the hygrometer. Two thermometers are placed side by side. The bulb of one is exposed free to the air and the bulb of the other is wrapped with a piece of cloth which is kept wet with distilled water. Then, the drier the air, the greater the difference between the wet and dry bulbs. For example, when the dry bulb indicates 80 F and the wet bulb 70 F, the relative humidity is 62 per cent, and the air could not be cooled more than 10 F by evaporation. With a dry bulb of 110 F and wet bulb of 75 F, the humidity is 19 per cent and a maximum temperature differential of 35 F can be effected. As the incoming air is cooled by the evaporative process, the humidity is increasing, and as the dry bulb temperature approaches the wet bulb temperature, the humidity is approaching saturation.

In theory, a properly engineered evaporative cooling system adds little moisture to the room air. As the

supply air leaves the cooler, mixes with drier room air, and increases in temperature from the heat load, a lower comfortable dry bulb temperature results. There are several factors, however, which work against this theory, such as, when room humidity becomes excessive or outside dry and wet bulb temperature differential becomes narrow. Infrequently, evaporative cooling creates a sticky sensation and a feeling of chill causing shock when stepping into the hot outdoors. Cooling, like heating, causes physiological reactions and there is a narrow margin between comfort and discomfort.

Recognizing the need to bridge the gap between cooling by evaporation and cooling by refrigeration, Adam and Gust Goettl of the International Metal



The basic elements of a hygrometer, see text.

Products Company, Phoenix, Arizona, initiated four years ago a research program which has resulted in a new approach to evaporative cooling. This new system appears to extend the market of the evaporative cooling industry to more than three-quarters of the inhabited parts of the world.

The system reverses the normal evaporative cooling procedure. Instead of forcing air into the rooms, it allows the cooled air to drift into the house through a system of ductwork. At the same time, room air is exhausted into the attic through a system of ductwork. This method overcomes the objection to discharging high volumes of air directly into a room, causing drafts. Full value of the cooled air is realized as it passes through the attic where it is exhausted, lowering the temperature of the ceilings in the rooms below.

The reversal of air handling has the advantage that it does not outmode present types of coolers. The same type of cooler is installed and the ductwork is virtually the same. The difference is that the cooler unit need not contain an air blower, except under the

most adverse conditions, and a secondary system of ducts is required to pull the air from the various parts of a building to the exhaust blower installation on the roof. The cost of exhaust type evaporative cooling installations average 30 per cent more than regular evaporative installations. In large buildings and stores the difference in cost would be even less.

The exhaust system brings effective cooling by evaporation close to the control attained by other methods of cooling. Maintaining positive control of the cooling effect, while all windows and doors in a building are kept closed, is an important advantage that is not readily understood outside the industry. Despite all the efforts evaporative cooler manufacturers have devoted to education of the public, it was hard to convince the average housewife that the most efficient operation of an evaporative cooler required at least one window in every room be partly open (to allow escape of air). It just did not seem the natural thing to do when it was 110 F outside. Few homes, or other buildings for that matter, have adequate outlets for escape of air which has performed its function. As a result of this tendency to keep the cooled air bottled up inside the building, many users of evaporative coolers built up the static pressure sufficiently to nullify part of the cooling value of the air and suffered the discomforts of mounting humidity. Exhaust cooling permits keeping doors and windows closed allowing control over the flow of air in and out of a building. Evaporative cooling can thus be engineered to operate under climatic conditions which were formerly beyond its range.

Change in Ceiling Temperature Vital

The reduction of radiant heat from the ceiling is alone sufficient to make a considerable reduction in the sensible heat in a room. While the constant exhausting of the air in the building, which in turn draws a smooth, even flow of cooled air rapidly through the cooler unit, makes only a minor change in the actual room temperature, the change it does make is out of proportion to the actual figures because the effect is sensible heat reduction. It may be likened to flying in a plane. For every thousand feet of altitude gained, the temperature drops 5.5 F. While changing the cooler operation from a pressure blower to an exhaust blower system does not produce the effect of a major drop in the temperature, the change in static pressure from positive to negative in a building does have certain important effects. It banishes the feeling of stickiness since the weight of the moisture in the air is virtually nullified. It creates the ideal air condition for maximum cooling.

Since the average, well installed evaporative cooling system has a general efficiency of approximately 80 per cent under constant operating conditions, a further important gain in favor of the exhaust type of system is achieved by this positive control of air circulation through increased efficiency. As is well understood by the industry, the physiological cooling effect is greatly increased by speeding up the rate of air movement. The greater air movement the greater its ability to create a feeling of coolness under even the most adverse conditions. Research by Dr. F. W. Kent of the California Institute of Technology at Pasadena on greenhouse cooling by evaporation stresses the need

and value of strong, positive ventilation. Experiments at Caltech indicate that by using a blower able to renew the air in the whole green house about every 2 to 4 minutes a very decided lowering of temperature is achieved.

More Air, More Cooling

Dr. Kent has found that the faster the air passes through the greenhouse, the more effective the cooling can be. In air conditioned greenhouses at Caltech, they can, even on the hottest days and without any shading, keep the temperature down to 82-84 F by circulating evaporatively cooled air in volume. For this they have to supply 4000 cfm to a greenhouse which has an air volume of 1800 cu ft. In order to prevent damaging air blasts from such a rapid movement of air, the air is blown in under benches using wide dampered slots with multi-directional fins. Such a pattern of introduction lends itself ideally to an exhaust type application.

If a system is changed to exhaust operation, creating a strongly positive and continuous air motion, rather than the vagaries of blowing air into the house under pressure to make its own forced escape, the sensible cooling effect is noticeably changed. In large areas where adequate openings are needed, in order to assure proper escape of the cooled air from a blower system, a small breeze or change in outside air currents can materially affect the rapidity with which the air in a building is changed. Opening and closing a door or window can cause the same effect.

This inability to control precisely the flow of air in evaporative cooling systems has been a considerable barrier to full development. Under the certain control of the exhaust system, not only is positive movement of the air assured, but the trend and action of the air movement can be engineered into the installation. Swirling back currents of air and unexpected drafts are eliminated.

However, research indicates that it is the basic reduction of static pressure to points on the minus side and reduction of heat gain from the ceiling which makes the new system superior to other methods of evaporative cooling. The reduction of pressure has the physiological effect of mitigating the physical reaction to humidity. It is because of this change in pressure that evaporative cooling by exhaust systems can be applied more widely over a much greater part of the country to give adequate cooling at low initial cost and negligible operating expense.

· Health Benefits

There are certain inherent qualities in the principles of evaporative cooling which are beneficial to sufferers from various allergies, such as hay fever and sinus complications resulting from dust. The action of the evaporative unit washes the air and filters it thru a 2 in. thickness of renewable fibre pads. Thus, air as it comes from the cooler unit, is low in dust and pollen content. Under the blower system a part of this benefit was lost by having windows open to permit exit of the used air. Using the exhaust system only filtered and washed air enters the building.

Most of the residential developments in the Southwest, since the war, have had as part of their architectural design, the inclusion of evaporative air cooling units. These have been as much a part of the structure as the heating unit. Many can be readily changed to the more efficient exhaust type of cooling without undue expense. New homes now being designed by the more progressive architects and builders are incorporating the ductwork for exhaust air cooling into the basic construction plans. As in previous evaporative cooling installations, it is still possible to use the same ductwork for both the cooling and heating systems, where heating is by air.

New Treatment for Pads

In conducting various experiments looking toward improvement of the efficiency of moisture diffusion in the wood fibre filter pads, International Metal's research laboratory found a simple chemical treatment which applied to the aspen wood fibres, caused the fibres to absorb water thirty times faster than the natural fibre. The company now treats all of its pads with the chemical, which is comparatively inexpensive, and also supplies chemically treated replacement pads. The chemical has the further effect of inhibiting algæ and fungus growth in the constantly wet pads.

In the exhaust type of evaporative cooling a broad new horizon of installation possibilities has arisen because of the light weight and flexibility of the units. This is in the earth moving industry.

In Arizona, one of the leading copper companies has made numerous installations of combined evaporative cooling and heating units on power shovel cabs to maintain an even year-round temperature for both equipment and operator. This company has found that washed and filtered air prolongs the life of the average power shovel engine nine to fifteen months, by elimination of rust and control of engine temperature.

Engineers now studying the problem of applying evaporative cooling to underground and surface earth moving equipment believe that with the exhaust type of installation engineering problems can be greatly simplified. With the exhaust blower housed in the roof of the shovel or locomotive cab, it becomes possible for the moistening pad grill frames to be built into the housing of the cab, projecting only an inch or so on the outside. Units are now being developed for several types of stationary and movable equipment where aggravated dust and heat conditions now considerably shorten the life of the power plants.

Discharge Under Closed Shop Contract Overruled

A TRIAL Examiner for the National Labor Relations Board has ruled that an employer and a union both violated the Labor Management Relations Act in the discharge of an employee under a pre-L.M.R.A. closed-shop contract, which contained no expiration date.

The examiner, Joseph L. Hektoen, found both the union and the employer guilty of discrimination and illegal coercion. He recommended that the employer be required to offer the discharged employee full and immediate reinstatement to her former position or one substantially equivalent. He also recommended that the employer and the union be required "jointly and severally" to reimburse the employee for the wages she had lost.

Test Results of Blower Air Delivery Through Evaporative Coolers

AL GALABA

Morrison Products, Inc.

As evaporative cooling has evolved one of the problems that it has encountered has been the question of rating units according to actual air delivery. A blower manufacturer has now conducted tests to determine the air delivery of evaporative coolers with wet and dry pads and varying system resistances.

In the absence of an industry organization-sponsored testing program, some manufacturers of evaporative cooling units have rated their coolers according to the test data supplied by the manufacturer of the blower used. It has not always been possible for these manufacturers to set up the facilities needed for running the required tests on the evaporative coolers. It is true that there are evaporative cooling units available which have a rated capacity that is thoroughly tested and realistic.

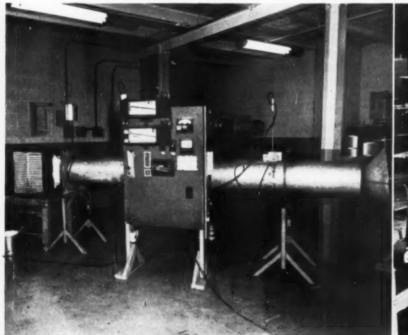
Recognizing the fact that the air delivery of an evaporative cooling unit cannot possibly be the same as the free delivery of the blower installed in the unit,

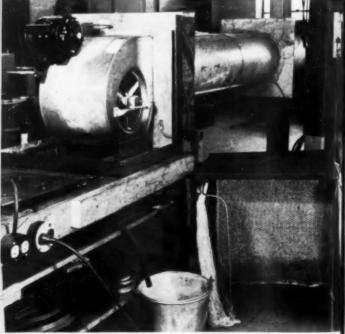
our company decided to initiate a testing program to determine what the delivery ratings should be. The charts on the opposite page indicate the results of these tests and the following paragraphs give some of the test background.

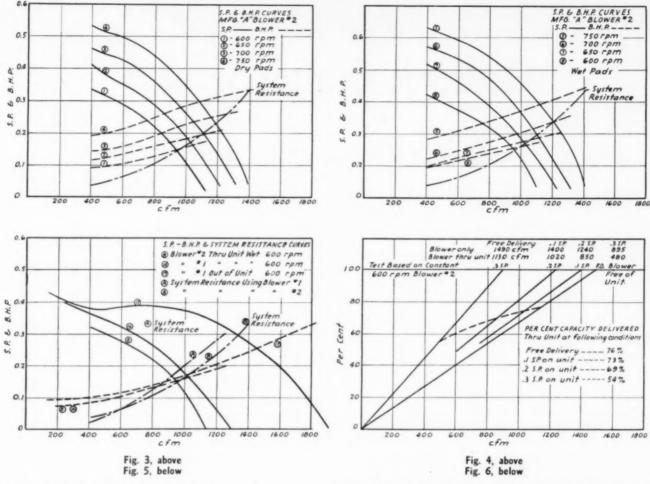
Tests: Unit was run with filters in place, both wet and dry, at 600, 650, 700, and 750 rpm from which the curves in Fig. 3 for dry and curves in Fig. 4 for wet pads were obtained.

Conclusions: In comparing performance of curves, it was found that cfm delivered was virtually the same for either wet or dry pads. It was also noted that the system resistance was the same for wet or dry filters as

Fig. 1, left below shows the test installation which was used in the experiments. Fig. 2, right is a closeup of the blower setup.







long as the same blower unit was used.

Comment: There is probably a general conception in the industry that the air delivery through wet pads is less than that through dry pads. The tests seem to disprove this.

Tests: Tests were run through evaporative cooler to determine whether system resistance changed when different blowers were used. Blower No. 1 gave the results shown by curve 16 whereas Blower No. 2 gave results in curve 8. New Blower No. 1 was also run free of evaporative cooler, curve 17. The difference between curves 16 and 17 gave system resistance curve A. System resistance curve B was same as shown on Fig. 3 and 4.

Conclusion: Using different blowers through unit produced different system resistances of unit as shown by A and B. System resistance A was higher in that Blower No. 1 delivered more air; so, the better the blower the higher the system resistance becomes.

Comment: The purpose of this test was to prove that different blowers of approximately the same diameter do develop different capacities. As indicated, the system resistance of a unit changes as the blower changes. This means that a manufacturer cannot change blowers on an evaporative cooling unit and still use the original rating. The unit should be retested. Referring back to the curves in Fig. 5, it is easily seen that free delivery of the blower outside of the unit is greater than free delivery of air through the unit. This reemphasizes the fact that evaporative coolers must be rated by actual delivery through the unit and not

according to the blower manufacturer's rated blower deliveries.

Tests: An example of what can happen if blower manufacturers' data is used to rate evaporative cooler is shown in Fig. 6. At free delivery there is a drop of 24 per cent of the blower manufacturers' rated delivery. If the evaporative cooler should be connected to duct work with a resistance of .1 sp, there would be a drop of 27 per cent of the rated capacity.

Overall Conclusions from Tests

As a result of the tests that were made we have formulated several basic precepts which should be considered by the manufacturer of evaporative coolers.

- Delivery of air through the evaporative cooler will be the same with the pads wet or dry.
- A different blower in a cooling unit will give different system characteristics. The higher the capacity of the blower, the higher the resistance of the system.
- Actual tests should be run on evaporative coolers: however, if no facilities are available for tests, use 75 per cent of the blower manufacturer's rated capacities.
- 4. From the test results, it would seem that evaporative coolers using ½ hp motors would fall in the following classes, using an average value from various blower manufacturers' ratings:

Nominal 10 in. wheel dia DWDI 1200 cfm Nominal 12 in. wheel dia DWDI 1500 cfm Nominal 14 in. wheel dia DWDI 1900 cfm Nominal 16 in. wheel dia DWDI 2100 cfm

Electronic Control Systems

Comfort Control With Electrons

Part 2 of a Series

EDWIN F. SNYDER

Minneapolis-Honeywell Regulator Company

This installment describes the ideal comfort control system and shows how electronics are applied to such a system. Extreme sensitivity and positive control are the results.

 ${f F}^{ ext{IGURE 3}}$ shows a very simple circuit, similar to the one discussed last month and combining the features of the Wheatstone Bridge and the vacuum tube. It must be realized that the circuit shown is basically correct, but the voltages and sensitivity required to make this particular circuit operate would be too great to be practical. Other stages of amplification would be necessary to make this a practical application. The vacuum tube is illustrated with its four basic elements, and the grid is shown connected to a bridge which furnishes the necessary signal to the grid and contains the control elements. The output of the tube is shown operating the coil of a relay, the means by which the final control of the operation is accomplished. In the case of comfort controls, this relay may be used to start and stop a burner or circulator, under command of the bridge circuit.

Temperature Changes Balance

Previously, it was pointed out that the condition of balance of the bridge depended upon the resistances in the various legs. It was also shown that a very small condition of unbalance on the bridge could be used as the signal on the grid of a vacuum tube, and thus control a much larger current. Since comfort control is the objective here it would be desirable to be able to vary the resistances of the bridge by means of

changes in temperature. Most metals have the property of changing their electrical resistance with changes in temperature and this property is essential in control applications. It is necessary to choose the metal which has the correct coefficient of resistance change, is stable, has the appropriate physical form, and is readily adaptable to standard manufacturing methods. This material is then used to make the proper legs of the bridge. The bridge will then change its balance with variations in temperature and, through the type of circuit shown in Fig. 3, govern the operation of a relay which will, in turn, operate the heat source.

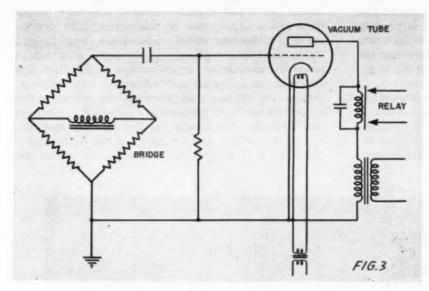
An Ideal Control System

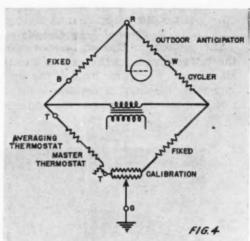
The above description is of the simplest type of electronic comfort control. Before proceeding to more elaborate devices, it would be well to stop and consider how a heating system should be controlled to give the utmost in comfort.

First of all, in the usual form of temperature control today, the temperature is sensed at only one point within the structure. The entire structure is then controlled from this one point. It would be highly desirable to sense the temperature at various points, so that an average condition of comfort could be maintained instead of one particular condition.

Secondly, since outdoor temperature is the greatest source of the heating load, it would be highly desirable to sense outdoor temperature and obtain some measure of control from this source. An outdoor control would also help to overcome system lags by altering the basic rate of heat input the minute a change in outdoor temperature occurs, rather than waiting until this change is felt within the structure and sensed by the inside thermostat.

A third factor to consider is that burners, as we commonly know them today, operate at 100 per cent capacity during the on cycle. Conversely, no heat is supplied during the off cycle. But the structure is losing heat at a steady rate, all the time. The rate may change from time to time, but heat is being lost





The basic circuit arranged to do work.

continuously as long as there is any heating load. This results in a cycling condition wherein too much heat is being introduced to the structure part of the time and not enough the rest of the time. It would be more desirable to introduce heat at the same rate it is being lost or as close to that rate as is practical with existing equipment.

h

al

ie

e

n.

g

ie

re

d,

ie

ie

9

r

ie

ol

ıt

n

80

st.

le

re

d

le

il

y

re

1t

is

is

te

st

19

A fourth factor from the point of view of comfort and convenience, is a comfort compensation that results in a higher control point as the outdoor temperature drops. This is made necessary by the fact that the body must maintain a definite heat balance, if a sensation of comfort is to be experienced. Under conditions of comfort, the body must lose approximately 400 Btu's per hour. About 160 Btu's by radiation, about 140 by convection and about 100 through perspiration and other means. Should any of these losses be decreased, there will be a feeling of warmth and should any one be increased, there will be a sensation of chill. As the outdoor temperature drops, the outside walls and window surfaces of a structure become colder. The body then loses more than the normal 160 Btu's per hour to these surfaces by radiation, and a feeling of cold prevails. In order to restore a feeling of comfort, the common practice is to raise the ambient temperature high enough so that the body heat loss due to convection is reduced by the same amount that the radiant losses are increased. This maintains the overall loss at 400 Btu's per hour, and the feeling of comfort is restored. Normally, during the heating season, the home owner will change the control point setting on his thermostat every time there is a major change in outdoor temperature, in order to be comfortable. An automatic control system to be fully automatic, should take care of this operation without the necessity for action on the part of the occupants of the structure.

Some engineers feel that solar compensation would be desirable and on large structures that lend themselves readily to zoning, this point of view may be quite logical. However, in the average-sized residence, it is felt that an inside control that will react instantly to a decrease in heating load due to solar effect, is sufficient. This viewpoint is tenable if it is remembered that solar loads are usually felt almost instantly within the structure due to the large glass areas found in the modern house and, therefore, solar anticipation is not necessary.

In Fig. 4 is shown, schematically, an electronic circuit that can control a heating system and incorporates all of the features that were listed above as desirable.

The sensitivity of this bridge circuit can be set at any value desired by proper design of the unit. For a control of this sort, it is normal to demand a sensitivity of a small fraction of a degree at the room thermostats. In other words, a change of a fraction of one degree in room temperature will be enough to unbalance the bridge sufficiently to cause an operation or an interruption in operation of the heat source, depending upon the direction of the temperature variation.

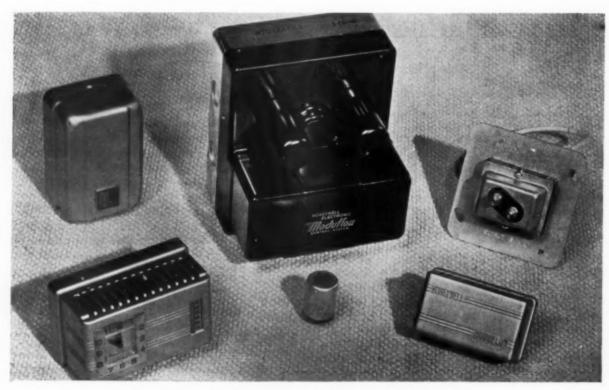
Thermostats Average Temperature

The room thermostats shown in Fig. 4 as being in series, satisfy the desire for room temperature control from more than one point. Although only two thermostats are shown, there could be three or more in this part of the bridge circuit. However, the practical difficulty of finding three or more good thermostat locations in the average home indicates that two thermostats are the optimum number (in small houses it is customary to reduce this number to one). It will be noted in Fig. 4 that only one of the thermostats has a control point adjustment and that the two thermostats are wired in series. The result of this scheme is to give an average control point that results from the conditions at both locations. It is not intended to infer that this method will take the place of good heating system balance, but it will help to compensate for conditions that are beyond the control of balance, such as solar load on one side of the structure or a high occupancy load in one room. With the normal thermostatic control, if there should be a high occupancy load in the room in which the thermostat is

located, there would be a tendency to shut down the heating system because that room is warm enough. However, an averaging thermostat in a location where the load is more nearly normal, would prevent the other parts of the structure from cooling off too much.

Control From Outside

The outdoor anticipator, because of its location in the bridge circuit, performs two functions. First of all, it serves to call for heat as the outdoor temperature falls. Secondly, it requires a slightly higher inside temperature to balance the bridge as the outdoor though there had been a rise in temperature at the thermostats. The result of this action is to provide periodic operations of the heat source, even though there has been no change in thermal conditions at either the thermostats or the outdoor anticipator. The action of the cycler is modified by the thermostats so that as the heating load increases, the length of the on periods and their frequency is increased to meet the new demand. Conversely, as the heating load decreases, the length and frequency of the on periods is decreased until a predetermined minimum is reached.



Here are the component parts of an electronic comfort control system.

The author describes the function of each unit in the text.

temperature falls. Obviously, the effect of the outdoor anticipator must be gauged by means of the proper resistance so that this over-compensation will result in a feeling of comfort. It is felt that this control should raise the control point of the inside thermostats approximately one degree F, at design conditions.

The cycler takes care of the last requirement set for this control system, namely, to demand heat input from the burner at the same rate heat losses occur from the structure, insofar as is practical. Existing burners are going to operate at full output during the on cycle, but by cycling more frequently for shorter periods of time, the optimum control is approached.

The cycler consists of two basic elements. First is the temperature sensitive resistance that is part of the bridge circuit. The second part is a coil of wire near the first that acts as a resistance heater. When the relay which controls the heat source is closed, this little heater is energized. As the heater warms up it heats the temperature sensitive wire and thus raises its electrical resistance. This action tends to restore the bridge balance and shut off the heat source just as

at which point the heating system is shut down under fadeout conditions.

Cycler Prevents Overshoot

The cycler also performs one other very important function in connection with the morning pickup period, after a night of reduced temperatures. With the standard type of control system, the heating system is started as soon as morning pickup begins and runs continuously until the daytime control point is reached. At that point, it shuts off the heat source, but the heat stored in the furnace and the heating medium, continues to raise the room temperature until this excess heat is dissipated. This may result in a room temperature several degrees higher than the one desired. With the electronic system incorporating the cycler, the burner runs continuously until room temperature has restored the bridge balance to the point that it again comes within the field of control of the cycler. This usually occurs about 2 degrees below the desired control point and here the cycler causes the burner to begin cycling and the control point is approached at a decreasing rate, so that no overshoot occurs.

Notice that in the description of this control system, all temperature sensing elements consisted only of small coils of wire. There are no moving parts in any of the controls, except the electric clock which provides night setback and morning pickup, and the relay which controls the heat source. From the standpoint

D

r

e

S

S

e

t

e

e

of the dealer, this insures a lack of service calls because there are no parts to become worn or lose their adjustment.

The very simplicity of these controls, together with the ease of installation, and the high degree of comfort which they provide, should make them very popular both with the heating contractor and the heating customer.

Air Conditioning in Packing Plants

R. C. NASON Great Neck, Long Island

PPLICATIONS of air conditioning to industry become more numerous with each succeeding year and one of the largest fields for such applications is the food processing industry. In the manufacture of many types of foods it is essential that the air be maintained at a fixed temperature and humidity. One such instance in the food industry is meat packing, where food safety is a problem the year 'round but operation in summer would be out of the question without artificial cooling. Meat must be kept at a low temperature during processing to prevent the growth of bacteria. Humidity is another factor that must be considered; if the humidity of the air was at a point that caused the meat to lose moisture, the meat packer's profits would be vanishing as the meat lost moisture and shrank.

Many installations in meat packing plants call for the use of refrigerating coils; but, there has been a

Here is the cooling unit in the packaging room of the meat packing plant. Like the other units installed it is located in such a way as to interfere with production operations as little as possible.

growing tendency toward the use of air conditioning in the rooms where processing operations are performed. An installation of this type was recently completed in a meat packing plant by Faron Sheet Metal Contractors, Jersey City, New Jersey. The plant was located in North Bergen and the system was designed to maintain a temperature of 50 F with a relative humidity approximating 50 per cent. These requirements were specified to prevent the moisture loss described above.

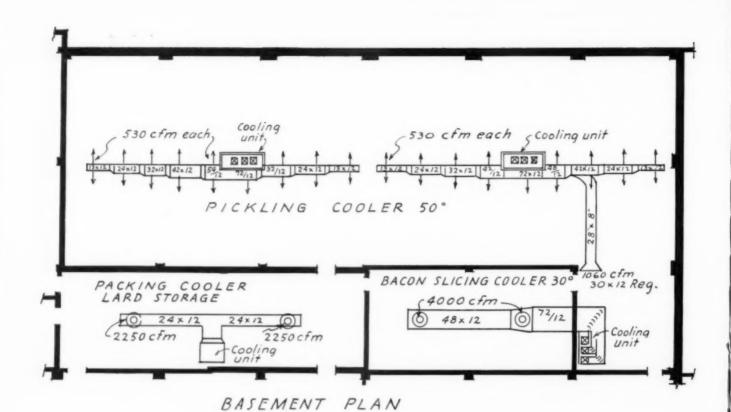
This particular plant handles only one kind of meat, pork, and about 80,000 lb of it are processed each day. An amazingly small amount of that poundage is waste since all scrap material is rendered and sold. The first stop for the slaughtered and dressed hogs after they arrive at the plant is the cutting room. The function of that department is to separate the carcass into the various cuts that are smoked and cured. Room temperature maintained is the same as the overall requirements, 50 F and 50 per cent humidity.

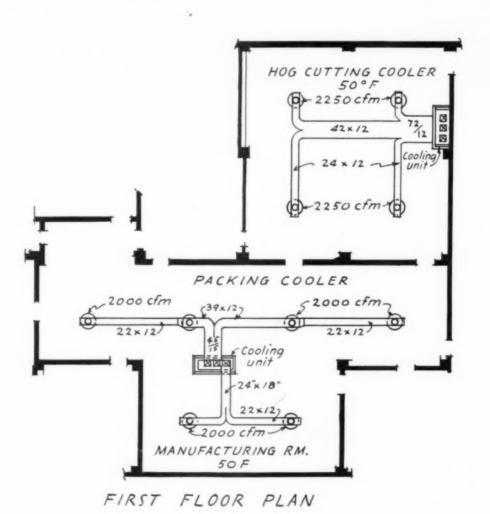
As indicated on the plans 4 air diffusers were used in the cutting room to furnish a total of 9,000 cfm, resulting in 35 air changes per hour. The cooled air was recirculated and makeup air, brought in from the roof, was added as required.

In the sequence of operations, the cutting room is usually able to process meat faster than the other departments can handle it, so two refrigerated storage rooms were required in this plant. Bunker coils are used to keep the larger of the rooms at 28 F and the smaller at 50 F.

Another conditioned area on the first floor consists of the manufacturing room and the packing cooler which adjoins it. There are other rooms on this floor which are cooled but bunker coils are used. In the manufacturing room meat is minced and blended for sausage and the sausage casing are made. Six air diffusers deliver a total of 12,000 cfm in these two rooms so that the air is changed 30 times each hour. A single cooling unit was used for the two rooms.

The basement of the plant is fully excavated and 4 cooling units were required for the various departments. Largest of these rooms is used for pickling;





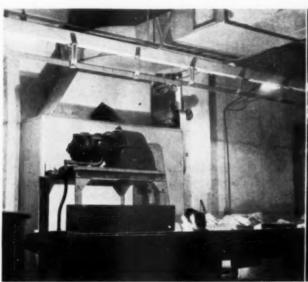
that is, hams are soaked in brine before smoking and further processing. Two units were required to cool the pickling room to 50 F. It is 100 by 34 ft in area and the 18,000 cfm delivered by the two units result in 24 air changes an hour. Each of the units has its own duct system and side grilles are used, discharging air at the ceiling level and projecting it across the room. The grilles are 24 by 5 in. and are spaced 4 ft apart.

Next to the pickling room in the basement is the bacon slicing cooler where 2 diffusers supply 8,000 cfm. The number of air changes is higher in this room, 55 per hour.

Last of the air conditioned rooms was the basement packing room. A ceiling hung cooling unit was specified for this area and 4,500 cfm delivered through 2

the actual plant area and the roof and walls of the building were well insulated. Insofar as the processing was concerned, hot water is used at some steps in meat production and the smoke rooms gave off some excess heat.

In the original planning of the installation, after the decision to specify air conditioning had been made, the question of whether to use a large, central plant cooling system or a number of units sized to the rooms arose. The latter choice was made because it was felt there would be a saving in installation cost and that the slight temperature gain in the short ducts would make insulation unnecessary. Another major factor in the decision was the flexibility that is inherent in the system made up of individual units. In case of an





Left, this unit is located in the hog-cutting room against the wall to save floor space. Right, a view of the pickling room, showing the sheet metal chute from the cutting room above.

diffusers results in 24 air changes per hour.

Ductwork-for the entire job was made of 18 gauge galvanized steel. This heavier gauge was specified because the dampness, slight acid content in the air and lack of insulation would all tend to have a deteriorating effect on the ductwork.

An example of some of the sheet metal work supplied by the contractor is shown in one of the illustrations. Chutes were installed that led from the cutting room on the first floor to the pickling room directly below it. Thus, meat that is to be pickled after cutting is dropped down the chute so that handling is at a minimum.

In analyzing the overall requirements of this installation one of the most important points to bear in mind is the fact that worker comfort was secondary in the planning of the job. It was vital to the production of meat that the temperature be kept at 50 F and the workers were forced to acclimate themselves to that temperature. Plant officials claim that very few of their employees are ever troubled with colds, however.

When the cooling load for the plant was estimated the design of the building proved such as to minimize cooling requirements. Very few windows opened into equipment failure the entire plant would not be forced to shut down and product damage could be kept to a minimum. And if it became necessary to close one of the operating departments, this could be easily done with a saving in power.

Ductwork of Uniform Depth

Due to the use of overhead handling equipment in the plant, the ductwork used was made uniformly 12 in. in depth. This kept loss of headroom to a minimum. Air diffusers were used in all rooms except the pickling room where a long air throw was required and side grilles were specified in the plans.

This installation description has been offered to show that a plant such as the one discussed is a good source of business for the air conditioning and sheet metal contractor. The way in which this job was laid out made it, in reality, a group of smaller systems and thus simplified the engineering of the equipment. Standard sized cooling units were specified and the ductwork was extremely simple. Jobs like this do not present difficult engineering problems and can result in a very profitable volume of business for the contractor who is willing to hunt up logical prospects.



Cargo Planes Heated By Warm Air

RUEL McDANIEL Port Lavaca, Texas

JUST as southern low-altitude heat is a problem for air-freight haulers in summer, the extremely low temperatures of high altitudes in winter also prove hazardous to perishable cargoes.

Slick Airways, Inc., with headquarters in San Antonio, Texas, has solved the low temperature problem by the installation of an individual heating system for each of the company's 10 C-46E Commandos.

The heating system consists of four gasoline fired combustion type heaters capable of producing a total of 500,000 Btu per hour. Three of the heaters are in the plane and are automatically controlled by thermostats which keep the temperature at exactly the degree specified by the shipper. The additional heater plays an important role on the ground where loadings and off-loadings at air-freight stations across the continent cause loss of cabin heat through wide-open doors.

Slick Airways engineers last spring were the first to achieve air conditioning of plane cargo cabins with fibreglass insulation and dry-ice cooling plants. As soon as the fleet was equipped to protect refrigerated fruits, vegetables or flowers from summer heat, the engineers started work on controlled heating for the winter.

Special Control Panel

With the aid of a specially developed "cabin stat" coil used in connection with electronic control instruments, Slick Airways maintenance men installed a system by means of which the plane captain, from a control panel at his elbow, sets the temperature in the cargo cabin at any desired point.

Three thermostats regulate the flow of warm air. Although the system is automatic, the pilot can read the temperature at two strategically located spots in the cargo cabin on the control panel, thus giving him a complete check on the operation of the system.

The panel's remote control selector permits setting

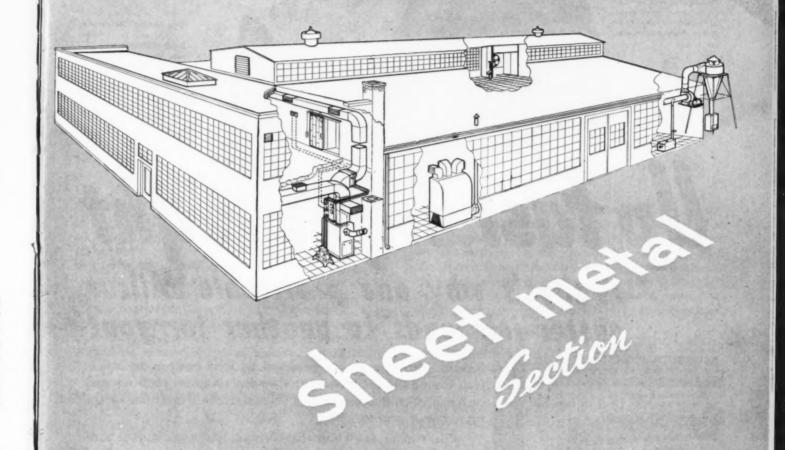
the cabin temperature at any point between 40 and 80 F. Rearrangement of ductwork and relocation of blowers in the plane effectuate an even and regular circulation of heat. With air channels provided by car strips between master containers of perishables in the 2,000 cu ft cabin, the circulation insures against temperature variations throughout the fully loaded air freighter, which carries up to six tons of such commodities.

Use of Auxiliary Heaters

Ground stops for loading, unloading or refueling are the worst problems in the protection of airborne fruits, vegetables or cut flowers. With the air freighter's $6\frac{1}{2}$ by 8 ft doors wide open, the cargo cabin rapidly loses stored heat. To guarantee a full flow of warmth into the cabin on these stops, Slick Airways is using especially modified, portable heat generating machines originally intended to heat Army buildings and plane engines. Tied into the plane's circulation ducts through an especially designed belly compartment connection, the ground heaters, capable of producing 250,000 Btu per hour, throw a controlled stream of heat into the cabin throughout stop-over periods. They are used also to heat cargo cabins prior to flights.

Three and four-ply fibreglass insulation, which helps maintain a cool interior during summer heat, also protects the airborne perishables against sub-freezing temperatures in winter.

Slick Airways started operations in March, 1946, with the 10 twin-engined planes, each with a useful cargo capacity of more than 11,000 lbs. During its first nine months the company hauled more than 7,000,000 tonmiles of air freight and volume is running two million tons a month today. The company operates on a nonscheduled basis, on contract, and hauls freight exclusively, maintaining bases and sales offices in nearly a dozen cities throughout the nation.



DESIGN - FABRICATION - INSTALLATION OF SHEET METAL PRODUCTS



.. that's why one profitable Milcor gutter job leads to another for you!



It takes less time to hang a good-looking job when you use Milcor Half-Round Gutter. You know you can count on pleasing your customer. You know exclusive Milcor features save time — and protect your profits.

What's more, you know that each job is a credit to your service, likely to bring more profitable jobs your way.

That's why hundreds of sheet-metal men insist on Milcor Half-Round Gutter and accessories (available with either lap- or slip-joints). Follow the example of their experience on your jobs, and enjoy extra profits!

INLAND STEEL PRODUCTS COMPANY

MILWAUKEE 1, WISCONSIN

Baltimore 24, Md. • Buffalo 11, N. Y. • Chicogo 9, III. • Cincinnati 25, Ohio Cleveland 14, Ohio • Detroit 2, Mich. • Kansas City 8, Mo. • Los Angeles 23, Calif. New York 22, N. Y. • Rochester 9, N. Y. • St. Louis 10, Mo.

complete catalog

Complete information on Milcor Half-Round Gutter and other items in the complete Inland line!

Tear out
this coupon

INLAND STEEL PRODUCTS CO., 4023 W. Burnham St.

Milwauken 1 Wicznamin

Send me complete information on Milcor rain-carrying products.

Name....

and mail

TODAY!

Company...

Company Address.....

City.....

..... (......) State....

Scientific Shop Layout (IX)

ERNEST E. ZIDECK Sheet Metal Consulting Engineer

The ninth of a series designed to present the latest in shop layouts and techniques for efficient production to our readers. The author's experience in sheet metal design and production has enabled him to show step-by-step the way in which a sheet metal shop can be made to operate most effectively and economically.

VISUALIZATION of the processes of work involved in fabricating sheet metal products for factories, plants, and commercial establishments is a fundamental requisite in planning an industrial sheet metal shop. The basic operations of working sheet metal for the industrial field are performed as in other sheet metal shops. Hoods over exposed machinery, guards, special containers, housings, heavy breechings, and ductwork for large ventilating systems are examples of the variety of products used in this field; the distinguishing characteristics of industrial work being that heavier gauges of metal are required, sheets are wider and longer, sub-assemblies are bulky, and the finished products may be of considerable size.

Free Area Needed

The free area, or work space, which has been repeatedly stressed in this series assumes even greater importance in the industrial sheet metal shop. The final assemblies demand adequate space and must not interfere with work in process at the machines as this free area also serves to allow material to be fed into the machines bordering it, such as forming rolls, shears, brakes, and welders. In other words, the free area is used for final assembly but it also facilitates previous operations by permitting projection of long materials into it. Visualization then, may be defined as providing for handling any size sheet or product that the shop might be called upon to fabricate.

Sheets of Heavy Gauge

Mere access to machines from the free area is not sufficient. Sheets commonly worked in industrial shops are 18 gauge and heavier. They are inflexible and cannot be forced to pass obstructions as they are fed through machines. Efficient working of such material requires careful planning in advance, visualizing all conditions before the permanent location of a machine or equipment is established.

In studying the layout, Fig. 1 (Page 90), we see that the shop has two entrances, one for shipping and receiving and the other for personnel. Incoming supplies, arriving by truck, are unloaded adjoining the entrance and structural shapes and sheet steel are

moved to a storage area along the wall. The area is kept clear so that finished products may be loaded on trucks for shipment. The structural shapes are stored on wall racks which are located on a direct line from the entrance so that they can be deposited directly on the racks after unloading. The cutter is placed so that sections of material can be brought down from the racks, cut and then placed on wheeling benches.

Storage of Steel

Sheet steel is stored on edge in marked, partitioned stands and the correct sheet can easily be selected for cutting in the large shear. This shear is provided with a bench at the rear to support the heavy sheet as it is cut. Full size sheets can project to the rear and the operator can operate the machine from the front without difficulty. A shop of the type we are discussing usually has a rotary shear which is frequently positioned as shown. A sheet being cut on this shear would project into the free area and the operator could manipulate it without interfering with other shop operations. The foot shear shown in the drawing at this location is used only for small work and there is no conflict between the two shears when they are operating. Any other piece of equipment mounted here would have to be placed in such a way as to avoid obstructing the rear of the shear.

The sheets coming from 3 are placed on the bench 4 where notching, punching or drilling operations are performed on the blanks. The equipment here is mounted so that the blanks can easily travel to the next stop, braking, at 5. Long sheets can pass through the brake and be supported by the bench. At this station the forming roll is placed so that blanks can be inserted from the free area and the metal can pass through and again rest on the bench. A small foot operated brake is placed here for work which will not interfere with the large brake.

At station 6 is a bench with stakes and mandrels facing into the free area so that long sections can project into that area. The large table marked 8 is mounted on casters so it can be moved to wherever it is needed. Thus, there is actually free access to the bench 6 and the welding apparatus at 7. The welding

Fig. 1 Industrial Sheet Metal Shop

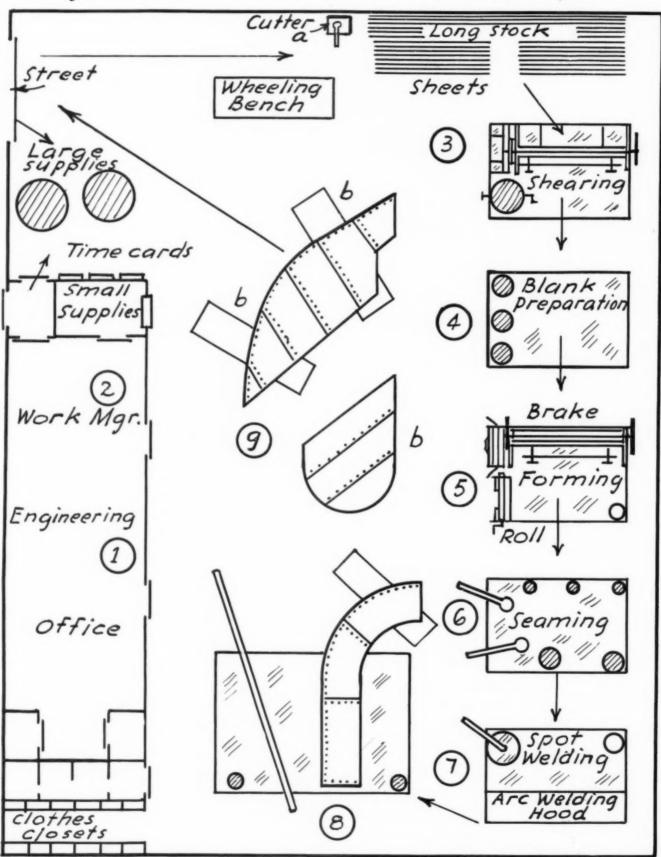
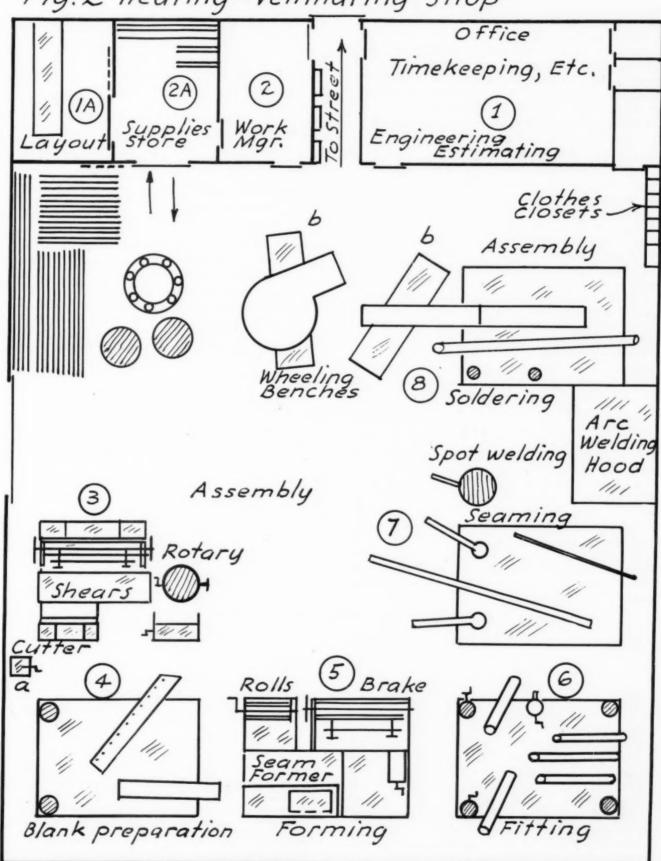


Fig. 2 Heating - Ventilating Shop



bench is equipped with an exhaust hood and fan for fume removal. For spot and arcwelding, the sub-assemblies are wheeled into position on benches and the material to be welded can be moved as required. The table δ is only 2 ft high and was designed principally for large assemblies. The long rail shown on the table can be moved to bench δ or 7 for riveting or similar work.

Sheet metal layout work is done on one of the wheeling benches or on the table &, depending on the size of the layout. The engineering department does the preliminary paper work and the necessary calculations. Ample office space has been provided for clerical personnel, engineering, and management departments.

Another Shop Described

Much of the description of Fig. 1 also applies to Fig. 2, a modern heating and ventilating shop. Though the metals used in this shop are of a lighter gauge and seaming replaces much of the riveting and welding in the other shop, the free area is important in handling furnaces, blowers, ductwork and fittings. Here the trucking entrance is on the long side of the shop and the offices front on a street. Part of the office space is used for layout work and for a small closed storeroom for smaller blowers, controls, registers, and general accessories and shop supplies. Entrance into the storeroom is through a sliding door with a similar door serving the layout man for manipulating his work.

Adjoining the truck entrance in Fig. 2, can be observed material stored on racks and in stands. Furnaces and other large items are stored in the open area next to the material racks. This storage does not interfere with the free area where final assembly takes place. In this shop the cutter is again placed in line with the structural pieces and the cut pieces are placed on the bench 4 for further processing. The sheets are moved across the aisle to the shear which is placed so that there is ample space around it. As shown in the drawing the sheets pass to a bench behind the machine after shearing. This bench also serves the small foot operated shear which faces the larger shear. The rotary shear is so placed that sheets it is cutting can be manipulated from the free area for easier handling. The auxiliary foot shear shown is not mounted and can be moved to any location where it might be needed.

Production Line-Up

Blanks are received at the bench 4 for notching, slitting, and punching. Pieces which are to receive a Pittsburgh lock are placed on a line with the machine so they can move directly to the brake for the next production step. Since the brake faces the free area, long sheets can be inserted without difficulty. There is ample room behind the brake for handling the braked pieces. The forming roll 5 is located in the same manner as the shear, for clearance. Obviously, any other equipment located in this area would have to avoid interference with the machines already there.

The crimping, beading, and turning machines shown above at 6 are portable, can be mounted on any bench as the need arises. This area is set off for fitting the pieces coming from 5. At 7, material is seamed and the arrangement allows long pieces to project into the free

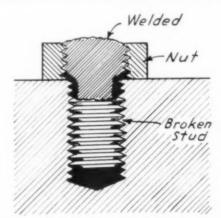
area. The welding and soldering area is compact to facilitate fume removal by the exhaust fan in the hood over the arc welder. This welding area can be reached from the assembly space and bulky products can be wheeled into position for fastening.

No dimensions are given with either of the drawings because the arrangement of machinery can apply equally well to any building of comparable layout, no matter what the dimensions. If the shop is small it is restricted in the matter of the size of work that it can handle, and yet, proper and efficient arrangement of machinery can give a good proportion of working space, even in a small shop. Using smaller sizes, machinery and equipment can be located so the material in process can progress reasonably fast with little interference. In this case the only difficulty might be that a product would have to be composed of smaller elements than the larger equipment would permit.

In planning any shop, the operations that are required should be provided for and visualized. Every machine must have the proper clearance so there will be no interference during production. As in previous articles, the future descriptions in this series will seek to apply basic principles which will hold, no matter what type of shop is planned or what the product is to be manufactured. These fundamental studies make it possible to solve almost any problem of layout that might arise in the modern sheet metal shop.

A Welding Short-Cut

SINCE ALMOST EVERY SHEET METAL SHOP now has welding equipment and the welding process itself has come into such widespread usage, here is a welding kink which will be of interest to many readers. Many times



it becomes necessary to remove a broken stud, either from new machinery being assembled or from older equipment. Here is an easy way to do the job by welding.

The sketch clearly shows how the stud is removed without the time-wasting drilling and chipping. As shown, place a large nut over the broken stud and proceed to build up the stud with weld and then join the nut to the new weld section. When this has been completed the nut and the stud have become one solid piece and the stud can be removed with a wrench. The expansion and contraction of the welding process loosens the stud and makes it easier to extract.

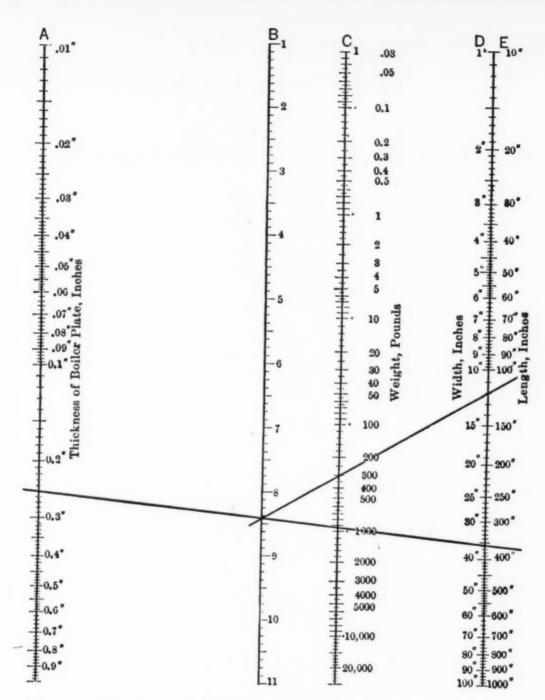


Chart Gives Weight of Steel Plate

W. C. Schaphorst

Newark, New Jersey

In two simple, quick operations it is possible to determine the weight of any steel plate by using this chart. It is necessary to know three dimensions of the plate: length, width and thickness.

How to Use It

Here is an example. Find the weight of a steel plate ¹/₄ in. thick, 30 ft long and 12 in. wide.

Find the thickness of the plate on Column A and draw a line from that point to the length of the plate in Column E, and locate the intersection with Column B. From the point of intersection draw another line to the width, in Column D, and the intersection with Col-

umn C will produce the answer.

Thus, in this example, the point 0.25 in., in Column A is connected with the 360 in Column E, because there are 360 inches in 30 ft. Then from the point of intersection in Column B, draw a line to the 12 in Column E and the intersection with Column C indicates that the weight is a trifle over 300 lb.

Many Sizes Covered

The chart has a wide range and covers thicknesses from .01 in. to 1 in., lengths from 10 in. to 1000 in., and widths from 1 in. to 100 in. As a result, the weights included vary from .08 lb to 25,000 lb.

Pattern Development for

Three-Way Branch Connection to Main

WILLIAM NEUBECKER Brooklyn, New York

The problem presented on the full page drawing is a study in projections and triangulation and may be applied to any number of branches. When actually developing the pattern it is only necessary to draw one branch, since the others are identical.

First step is to draw the profile of the base as shown by the dotted line 4°-4°-4° in the plan view. Three branches are specified for this problem so divide the circle into three parts, the result being the miter lines 1°-4°, 1°-4°, and 1°-4°. Now in its proper position above the plan draw the base line in the section through A-4° in plan as shown, and establish the height B-1. This height is the radius used to draw the quadrant 1-4, which represents the true section 1°-4° in the plan view. Divide this quadrant in equal parts from 1 to 4. Then drop a perpendicular to intersect the miter 1°-4° at 2" and 3°. Now using 1° as center with radii equal to 2" and 3° intersect the miter line 1°-4° at 2° and 3°. From these points intersect the horizontal lines in the quadrant above thus producing the intersections 2" and 3°. Trace the foreshortened curved line 1 to 4°.

Now divide the distance 4° to 7 in equal parts as shown by 4° -5-6-7 and using these points intersect the base line of the branch at 5° -6° and 7° . From 4° in the section in Fig. 1 draw the line 4° -10° at the desired angle and height.

Draw in the diameter 8-12 and using 10° as center draw the semi-circle and mark it off in equal divisions. From the points 9, 10 and 11 draw lines at right angles to 8-12 to intersect it at 9° - 10° and 11° . As there are fewer divisions in the semi-circle 8-10-12 than in either the foreshortened curve 1 to 4° or the base lines in the sectional view, 5 to 7° , the connecting solid and dotted lines are drawn.

Finding the True Lengths

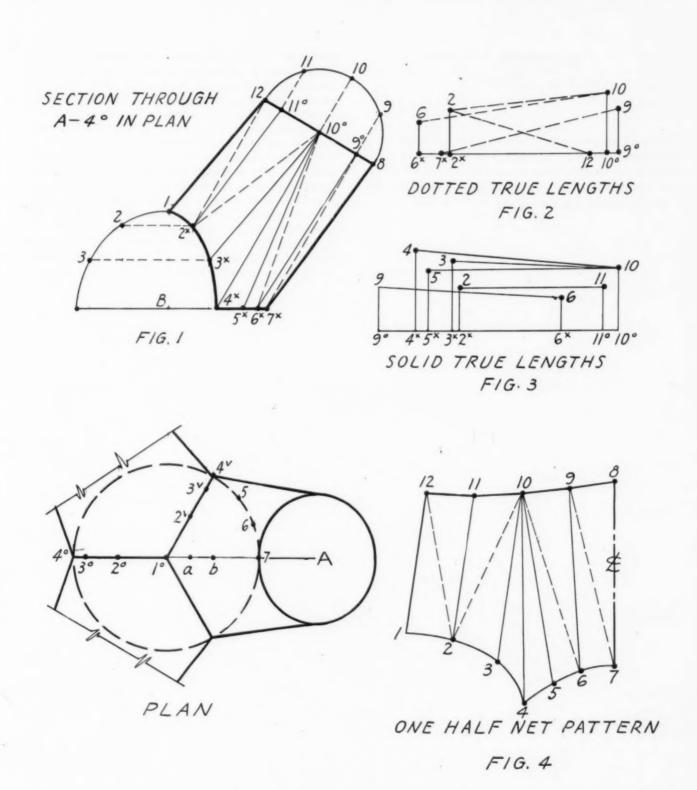
Take the lengths of the dotted lines in the sectional view in Fig. 1, 2^x-12 , 2^x-10° , $10^\circ-6^x$ and $9^\circ-7^x$ and place them on the horizontal line 6^x-9° in Fig. 2. These lines represent the base lines of sections to be constructed whose altitudes will be equal to the vertical heights in the semi-circle in Fig. 1 and the vertical heights in the one-sixth circle in plan shown by $1^\circ-4^x-7$. Find the

true lengths as follows: To find the true length of the dotted line 2^x-10° in Fig. 1, erect vertical lines in Fig. 2 from points 2^x and 10° equal to the vertical heights in plan measuring from the center line A-4°, from b to 4° and the height $10^\circ-10$ in the semi-circle in Fig. 1. Then draw a line from 10 to 2 in Fig. 2, which will be the true length of the dotted line 2^x-10° in Fig. 1. To find the true length of the dotted line $9^\circ-7^x$, the height at 10° in Fig. 2 would be $10^\circ-10$ and as 7^x has no height, a line is drawn from 9 to 7^x .

The true lengths of the solid lines in Fig. 1 are found in the same manner. Take the length of $4^{\circ}-10^{\circ}$ in the sectional view in Fig. 1 and place it in Fig. 3 on the horizontal line from 4° to 10° . At 10° erect the vertical line $10^{\circ}-10$ and at 4° erect the vertical line $4^{\circ}-4$ equal to $10^{\circ}-10$ in the semi-circle in Fig. 1 and b- 4° in plan. Draw a line from 10 to 4, this being the true length of $10^{\circ}-4^{\circ}$ in Fig. 1. Follow the same procedure for the other lines.

Developing the Branch Pattern

Take the distance 1-12 in Fig. 1 and place it in Fig. 4. Now, with 1-2 in Fig. 1 as radius and 1 in Fig. 4 as center strike a short arc near 2 and intersect it with an arc struck from 12, with a radius equal to the true length of the dotted line 12-2 in Fig. 2. Now with 12-11 in the semi-circle in Fig. 1 as radius and 12 in Fig. 3 as center draw a short arc near 11 and intersect it with an arc struck from 2 in Fig. 4. Proceed in this way until the solid line 10-4 in Fig. 4 has been drawn. Now with a radius equal to 10-5 in Fig. 3 and 10 in Fig. 4 as a center draw a short arc near 5 and intersect it with an arc struck from 4 with a radius equal to 4-5 in plan. Continue in the same way using the proper dotted or solid line. Trace the curved line in Fig. 4 from 8 to 12 at the top and 1 to 7 at the bottom of the pattern. Then 1-4-7-8-12 will be the one-half net pattern for one branch. If the full pattern is desired, trace the half pattern opposite the center line 7-8. Three full patterns are required and laps should be allowed for riveting. Collars are to be attached at the upper parts of the branches and at the lower main duct for connections.



Three Way Branch Connection to Main

- Wm. Neubecker

'o

it

d

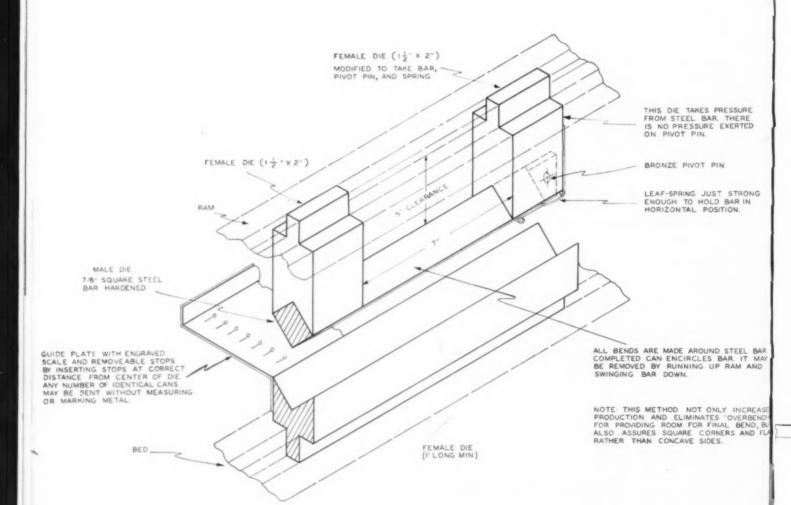
Applications of Production Dies

VAN FOWLER San Diego, California

The possibility of volume production of small sheet metal products may not have been explored by some of our readers. Here are two simple die setups which could be used to produce some profitable business using machines which might be idle. THE die setup shown has been designed to make possible the production of square and rectangular cans with absolutely flat sides and 90 deg corners. It eliminates two of the difficulties encountered when using a pan and cornice brake: bending under the first side of a can to clear the brake clamp and hand forming the can back to shape.

To remove the formed shell from the press with this setup it is only necessary to move the ram up, apply a slight pressure on the bar to clear the metal thickness and slide the shell off the bar. There is a considerable saving in production time possible with this setup because of its simplicity and accuracy.

Another feature inherent in this set of dies is the ease with which the press can be switched from this production to any other type of work.



DIE SET UP FOR MANUFACTURING SQUARE AND/OR RECTANGULAR CANS

To Press Brake Work

A NOTHER way in which the power press can be used to good advantage is in the stamping of small covers or lids for rectangular cans. Instead of notching the corners and forming the sides of the lids on a hand brake the same results can be obtained by making use of the stamp and die shown in the drawing.

ce

ır

It

n

le

d

is

a

23

e

-

e

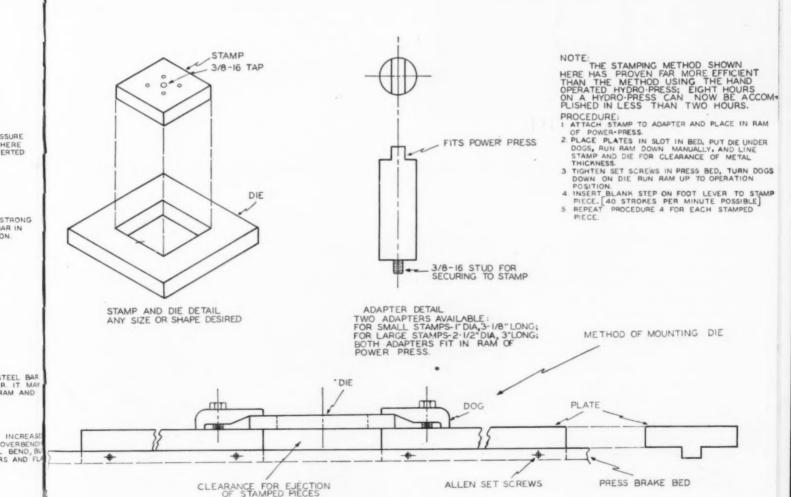
NS

In making the dies and stamps, the opening in the female die should be the exact dimensions of the inside of the can, (for an inside lid) and the stamp should be made smaller by the thickness of the metal. For example, in making a lid 5 by 7 in. with 3/16 in. flanges from 0.050 cold-rolled body steel, the female die would have an opening 5 by 7 in. and should be approximately 8 by 10 in. by $\frac{5}{8}$ in. thick. The male die or stamp would be 5 by 7 in. minus the thickness of the metal on each side. The adapter shown is practi-

cal for making small lids such as $1\frac{1}{2}$ by 2 in. or 2 by 3 in. But, for forming larger lids a $\frac{1}{2}$ in. piece of bar stock can be welded to the stamp, taking into consideration the degree of the ram movement and the distance the male stamp must travel through the female die to strip the lid on the up stroke.

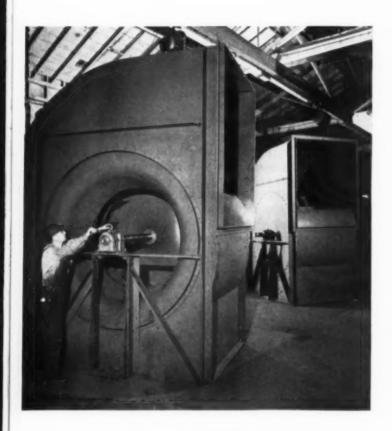
This setup is easily made on a press brake by putting metal-thickness shims on all four sides of the male die and forcing it into the female die, then tightening up the dogs on the plate. It is advisable to position the ends of the plate as close to the opening in the die as possible, thus eliminating deflection of the die.

Guides for the metal blanks may be attached to the female die by using 16 gauge cold rolled strips of body steel and spot welding them in a position making allowances for required flanges.



METHOD OF RAPID PRODUCTION OF SMALL STAMPED PIECES (TRANSFORMER CANS LIDS OF ANY SIZE OR SHAPE ETC.)

Library Requires Huge Ventilating Fans

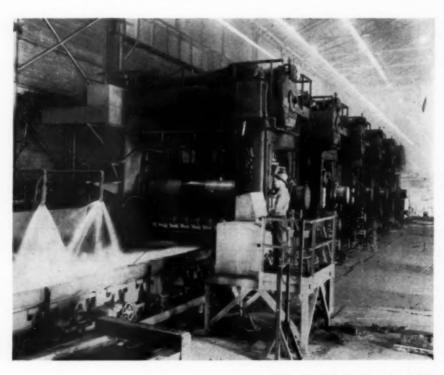


NINETY-TWO thousand cubic feet of air will flow every minute into the new library annex of the University of California, in Berkeley, from these big blowers. Just completed, the blowers are designed to provide the required amount of fresh air with the least possible sound, a particularly important consideration in a library. The wheel, with backwardly inclined blades, will turn at the relatively slow speed of 250 rpm. The 15 hp electric motor powering each unit is of the guaranteed silent type, turning at 900 rpm and transmitting its power to the fan shaft through a noiseless V-belt reduction drive. In the foreground of this picture, a workman is performing a final production step, tightening the adjusting screw of the shaft bearing on the air intake side. In the unit in the background, some blades of the big blower can be glimpsed through the air discharge opening. The units are identical, except that they have air intake openings on opposite sides; with housings of hot rolled steel, they weigh 6700 lb each. Other blowers, which are smaller but similar in design, are also being produced by the same manufacturer for drawing air out of the new library building. Installation of the job is being handled by the Ace Sheet Metal Works, of San Fran-

Converted Plate Mill Turns Out Hot-Rolled Steel Coils

THE photo shows the finishing train of six 132 in., four-high stands in the converted plate mill of Geneva Steel Company, Provo, Utah, which is now turning out coils of hot-rolled steel. These coils are then shipped to the Columbia Steel Company's new cold-reduction mill in Pittsburg, California. The steel is then cold-rolled to make sheets and tin plate.

In addition to the new line of coils, the Geneva plant will continue its regular production of steel plates of many sizes and thicknesses and of structural mill products. Built in 1942 to manufacture ship plates and structural shapes for the war, the plant was converted to coil manufacture with a minimum of lost production time.



AMERICAN ARTISAN, JULY, 1949 SHEET METAL SECTION

MAKES COMMON SENSE

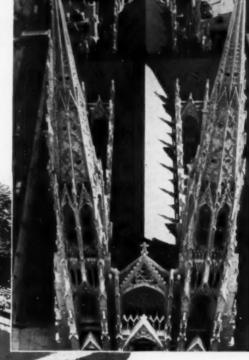
for BIG jobs...

St. Patrick's Cathedral, New York Jacob Ringle & Son, Inc. Sheet Metal Contractor

for SMALL jobs...

Revere Quality House, Houston, Texas





OLLAR for dollar-whether the job is big or small-Dit makes sense to use COPPER whenever you want the finest sheet metal construction. For of all commonlyused sheet metals, copper is the one metal that over the years has proved its endurance when exposed to the elements. Copper is the one metal that is beautiful when first installed and becomes more beautiful with age. And copper is the one metal that almost every sheet metal contractor prefers to work with.

It makes common sense whenever you use copper-to take advantage of the new installation facts and figures developed by the Revere Research Laboratories. You'll find these data in Revere's book, "Copper and Common Sense," an authoritative manual of sheet copper construction that has been widely distributed to architects and sheet metal contractors. There is probably a copy in your

files. Be sure to refer to it as your guide to finer and more durable sheet copper construction.

Revere sheet and roll copper, lead-coated copper and other Revere quality materials are available from leading distributors throughout the United States. A Revere Technical Adviser will always be glad to consult with you without obligation.

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities, Distributors Everywhere,

All the facts of value favor CHEVROLET ADVANCE-DESIGN TRUCKS



America's truck operators are wise buyers. They know the value of prime power with economy... of massive load capacity... of outstanding quality, durability and handling ease. They know the advantages of the latest and finest features and of greater driver comfort

and convenience. And they know that all the facts of value favor Chevrolet trucks to an overwhelming degree . . . that they cost less to operate, less to maintain, and have the lowest list prices in the entire truck field. That's why they use Chevrolet trucks more than any other make!

CHEVROLET MOTOR DIVISION, General Motors Corporation, DETROIT 2, MICHIGAN

TOP-VOLUME PRODUCTION BRINGS YOU TOP-VALUE FEATURES!

Chevrolet's new 4-SPEED SYNCHRO-MESH TRANSMISSION offers quicker, quieter and easier operation. Double clutching is eliminated because the gears are always in mesh. Faster shifting maintains speed and momentum on grades. Available in series 3800 and heavier duty models.

Chevrolet's power-packed VALVE-IN-HEAD ENGINES provide improved durability and efficiency as well as the world's greatest economy for their size! Chevrolet trucks have the famous CAB THAT "BREATHES"*! Outside air is drawn in and used air forced out! Heated in cold weather.

Chevrolet Advance-Design brings you the FLEXI-MOUNTED CAB, cushioned on rubber against road shocks, torsion and vibration.

Chevrolet's exclusive SPLINED REAR AXLE HUB CONNECTION adds greater strength and durability to heavy-duty models.

Uniweld, All-Steel Cab Construction • Large, Durable, Fully-Adjustable Seat • All-Round Visibility with Rear-Corner Windows* • Heavier Springs • Super-Strength Frames • Full-Floating Hypoid Rear Axles in the 3600 Series and Heavier Duty Models • Double-Articulated Brake Shoe Linkage • Hydrovac Power Brakes in Series 5000 and 6000 Models • Multiple Color Options.

*Heating and ventilating system and rear-corner windows with de luxe equipment optional at extra cost.

CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!





Wisconsin

Irving F. Kanitz, executive secretary of the Sheet Metal Contractors Association of Wisconsin, Inc., reports that several Wisconsin association members attended the Sheet Metal Contractors National Association convention at Washington. These were President G. F. Wolff, of Madison; L. A. LaCharite, Nels Madsen, Henry Ortwig, of Racine; Elmer Ehm, Harry Eschenburg, R. H. Fetting, Wm. Droegkamp, Frank Kramer, A. C. Mantei, Walter Marth, Martin Schaar, Robert Schomann, Louis Stefanik, and Mr. Kanitz, himself, all of Milwaukee.

The association extends congratulations to Frank Kramer, Milwaukee, who was elected to the office of vice president of the national association, and also to Angelo Hoffman, Milwaukee, who was chosen as a director of the SMCNA for a three year term.

Canada

The Canadian Chapter, National Warm Air Heating and Air Conditioning Association, reports that a total of 460 delegates were in attendance at the warm air heating schools held by the chapter during 1949. This figure represents a total of attendance at all schools. However, it does not include the many representatives from city bodies, schools, and committees who sat in on the sessions.

For the French-speaking associate members, the chapter has recently made available a French edition of the English Manual No. 7, "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems." The 36-page manual is made up in loose leaf style. Copies of the French edition gravity manual are also available.

With the recent acceptance of the Progressive Heating Co., Ltd., of Galt, Ont., the manufacturer membership of the Canadian Chapter reached a total of 34.

South Florida

At their recent annual meeting, the South Florida Roofing and Sheet Metal Contractors Association elected the following new officers:

William N. Palmer	resident
Ellard G. Kohn1st Vice F	resident
Russell H. Wilson2nd Vice F	resident
John P. Hunter Secretary-T	reasurer

Directors chosen were Albert W. Suter, Alfred G. Doudney, Drez Ager, Anthony Rodriguez, Wyley Shepherd, Steve C. Raymond, J. A. Thompson, Cy Bowen, and J. M. Montgomery.

Indiana

Many basic principles of design, installation, and control were discussed at a warm air heating conference held at Purdue University, May 12-13. The School of Mechanical Engineering and the Technical Extension Division of Purdue University, in cooperation with the Sheet Metal and Warm Air Heating Contractors Association of Indiana, served as joint sponsors.

The value of the discussions was so evident to those in attendance that the Indiana association is currently sending a questionnaire to each of its members for the purpose of measuring contractor interest in a warm air heating school as an annual event. The proposed school is to be patterned along lines similar to the one which is held at Lansing, Mich.

The questionnaire is designed to obtain opinions of all members on the advisability of holding the school, best date and location, subjects which should be covered, and the estimated attendance which can be expected from each member's shop, and from his town.

Members of the Indiana association who have received their questionnaires are asked to fill them out carefully and return them as soon as possible to Secretary Frank E. Anderson.

Coming Events

Sept. 25-Oct. 2—Houston Chapter, Associated General Contractors, 2nd Annual Houston Construction Industries Exposition. Sam Houston Coliseum, Houston, Texas. Loy W. Duddleston, General Manager, Exposition Policy Committee, 2103 Crawford St., Houston 3, Texas.

Nov. 14-18—Refrigeration Equipment Manufacturers Association, 6th All-Industry Refrigeration and Air Conditioning Exposition. Atlantic City Auditorium, Atlantic City, N. J. George E. Mills, Show Director, All-Industry Exposition, 1346 Connecticut Ave., N.W., Washington 6, D.C.

Jan. 23-27, 1950—American Society of Heating and Ventilating Engineers, Southwest Air Conditioning Exposition of the International Heating and Ventilating Exposition. State Fair Grounds, Dallas, Texas. E. K. Stevens, Associate Exposition Manager, Grand Central Palace, New York City.

Feb. 2-3, 1950—Sheet Metal and Warm Air Heating Contractors Association of Indiana, Inc., Annual Convention. Hotel Severin, Indianapolis, Ind. Frank E. Anderson, Secretary, 439 So. 17th St., Terre Haute, Ind.

Oil Heat Institute Sets New Sales Goals

Boston meeting sees need for cooperation at all levels in oil heat industry if new sales marks are to be set. Production of synthetic fuels by government discussed by department head. Distribution problems studied by forum made up of representatives of manufacturers and distributors.

B USINESS sessions of the 26th annual convention of the Oil Heat Institute of America opened on Wednesday, May 18th, designated as "Burning Oils Industry Day." All meetings were held in the Statler Hotel, Boston, with the National Oil Heat Exposition running concurrently at Mechanics' Hall. The exposition was open to the public during the week, May 16-20.

Chairman R. S. Bohn, retiring president of OHI, opened the first session with a brief summation of the oil heating picture as it differed from the time of the 1948 convention in Chicago. He brought out the fact that while supplies of fuel oil are now plentiful, the shortage during the winter of 1947 left such a deep impression that sales resistance is still encountered by the oil heating industry. According to Mr. Bohn, there is plenty of fuel oil and plenty of oil burning equipment. It is up to the industry to generate sales momentum and regain ground lost last year.

First speaker was Dr. W. C. Schroeder, chief of the Bureau of Mines' Office of Synthetic Liquid Fuels in the Department of the Interior. He discussed the extraction of oil from petroleum, coal, and shale, a process in which he has supervised a \$60 million research program for the government.

Dr. Schroeder pointed out that our consumption of oil and natural gas, in relation to coal, has been increasing steadily and in 1948 provided about as much heat and energy as coal. This is not in proportion to the total estimated energy of each fuel in reserve. Estimated total reserves of gas and oil are only about 4 or 5 per cent of our overall energy supply, coal accounting for approximately 95 per cent. By developing economic processes for shifting oil requirements to coal, at least in part, a broad base which will serve the nation's needs for an indefinite period in the future can be established.

Pilot Plants

He described the pilot plants which have been built for the synthetic fuel program and the wide variety of products which they can make, including gasoline and heating coils. Dr. Schroeder stated that coal hydrogenation is a versatile process since it can produce, separately or simultaneously, liquid fuels ranging all the way from high octane aviation gasoline to Bunker 'C' fuel oils for ships or industrial use, with little or no change in the plant. It is possible for such a plant to change almost overnight from the production of a



Joseph Dever welcomes the OHI to Boston.



Scene at Exposition opening.

full range of civilian products to those most urgently needed for military uses. This flexibility eliminates any need for new construction or additional raw materials when changing from one product to another. The speaker concluded by saying that the cost trends in other fuels made possible the establishment of a large synthetic fuel industry in this country in the near future, based on coal and oil shale. He indicated that there is much developmental work to be done before such an industry can begin functioning and that

bearing on the speed of its establishment.

Next on the program came "A Symposium of Industry Problems—Manufacturer and Distributor." Speaking for the manufacturers was W. A. Matheson, director of Eureka Williams corporation. Mr. Matheson regarded the selection of retail dealers as the most

the interest shown by the oil consumer will have direct



W. A. Matheson

J. E. Horton

pressing problem of the oil burner manufacturer today. Now that sales are more difficult to make, the less effective dealers will fall by the wayside in the race for the consumer's dollar. Several references served to bring out the point that the appliance business now has more dealers and fewer salesmen than it should have.

Mr. Matheson had made a survey of manufacturers in the domestic and industrial fields to find the characteristics of an ideal dealer. The consensus indicated a desire for an exclusive, franchised dealer sold direct, rather than through a distributor. He need not be exclusively in the oil business and, for the domestic field, merchandising ability was rated ahead of reputation for service. This rating was reversed in the industrial field. In almost every case, sales performance was regarded as a factor that could outweigh some of the others.

Distributors Problems

Representing distributors was J. E. Horton, president, Horton Heating corporation, Albany, New York. Mr. Horton began by emphasizing the importance to the oil heating industry of having good retail dealers. He advocated that manufacturers reexamine their sales policies in light of present-day conditions.

The responsibility of the manufacturer does not stop with the selection of the dealer, however. A dealer may need help in the selection and training of his salesmen. The wise manufacturer provides this assistance, either through manuals or the availability of



Left to right: A. E. Hess, managing director, OHI, Joseph Dever, governor's representative, R. S. Bohn, retiring president, OHI, and A. T. Atwill, 1949 president of OHI.

competent, well-trained field men. Good installations and service make the next sale easier and the manufacturer should provide better installation manuals and have field men available for this phase of the business, too.

Mr. Horton touched on several other points such as the recent fuel oil shortage which still lingers in some people's minds; the need for planning sales, and the promotion of the oil heating industry against its competitive fuels. He ended with the thought that every member of a retail organization can assist in a sale, present or future, and all should bear that thought in mind.

The Shortage Is Over

Thursday, May 19th was designated as "Dealer Day" and the meetings were under the chairmanship of J. A. Collins: First speaker of the morning session was Dr. Courtney C. Brown of the Standard Oil Company of New Jersey. In discussing the market for burning oils he stressed the fact that there is no longer any possibility of a shortage of oil such as occurred during the winter of 1947-48. However, Dr. Brown advised oil burner users and the oil heating industry to store greater amounts of heating oil during the summer, as a precaution.

"The burning oil market is potentially a very much bigger one than the gasoline market," said Dr. Brown. Energy studies made recently indicate that in 1947 about 75 per cent of the total energy used in the United States went into heating, firing steam boilers, and



W. C. Schroeder



C. C. Brown



A S Karman

producing electricity. Only 10 per cent of the energy was used on the nation's highways.

"The summer is a good time to undertake customer fill-up programs," he continued, "but it is also when the oil heating industry must prepare for the coming winter. That means a fill-up of tanks all along the line. The growing importance of burning oils in the



D. A. Packare

F. E. Mehrings

total petroleum market and the resulting increase in the importance of seasonal factors compel it. The industry must adjust its thinking to the desirability of regularly carrying larger light burning oil stocks through the summer."

A. S. Kozman, manager of Cook's Oil company of Oakland, California, took up the subject of "Competition in Automatic Heating." Stating that oil's direct opponent is gas, Mr. Kozman told of some of the merchandising methods used by public utilities in the past, when natural gas was being introduced in a new area.

He admitted that when the price situation favors gas those buyers who consider price alone will be lost to oil heating. But he insisted that another group of home owners who switch to gas, those who have been dissatisfied with oil heat, can be retained with the proper handling. Mr. Kozman said that he felt these faulty installations should be replaced at nominal cost, for the good of the industry. He said that in the past oil heating dealers had been insufficiently prepared to meet the publicity and merchandising campaigns put on by the gas companies.

Competition in Heating

In order to meet the competition offered by gas, Mr. Kozman stressed the need of cooperation at all levels of the oil heating industry; the importance of high standards of installation and service, as well as a public relations program to acquaint the buying public with the superiority of automatic oil heating. Only by presenting a united front can the oil heat industry successfully meet the challenge of gas.

One of the most troublesome problems facing the dealer was discussed by the next speaker, D. A. Packard, household sales manager of the Kelvinator division, Nash-Kelvinator corporation. The selection, training and supervision of salesmen was covered under the title "The Art of Specialty Selling."

Building a Sales Force

Mr. Packard began by saying that while he was not very familiar with the oil heating field he felt that the electric appliance business had very similar problems in the handling of salesmen. Drawing from the experience of his own company the speaker set up six major fundamentals for the building of an effective sales organization:

- 1. The attraction of men
- The selection from among those attracted of men who can be expected to succeed in sales work

- The establishment of an adequate compensation program
- 4. The training of retail salesmen
- The necessity for planning to provide periodic stimulation of salesmen to produce maximum volume
- The most important of all, because the success of all the first five fundamentals is dependent upon it, is the establishment of proper sales direction.

Citing figures which indicate that the specialty sales power of this country is at a low level, Mr. Packard repeatedly emphasized the need for sales direction and management. In a heating business this might be provided by the owner or a sales manager, depending on volume and number of salesmen, but the speaker said that any sales program will fail unless it has correct direction and supervision.

Thursday evening the annual OHI banquet took place with C. R. Collins, Gerotor May corporation, as toastmaster. The entertainment after the banquet was provided by an exceptional group of entertainers headed by Peter Donald.

Architects Day

"Architects and Engineering Day" was the title given to Friday, May 20th, final day of the convention. Chairman for the day's sessions was Frank H. Faust of the General Electric company. The engineering phase of the program was taken up by a forum discussion of means of obtaining lower heating costs.

Representing the manufacturers of vaporizing oil burners, John B. Mathis, Quaker Manufacturing company, recommended the use of this type of equipment where capacities of ½ to ¾ gph are needed. He said that the vaporizing burner could offer real savings in heating costs, and because of the simplicity of design and operation, maintenance costs would be lower. Actual figures were quoted to show the high combustion efficiency and low fuel consumption of vaporizing units

Oil Heat Improves Living

The point of view of the manufacturers of pressure type oil burners was presented by Howard E. Earl, Williams Oil-O-Matic division, Eureka Williams corporation. He traced the improvement in living comfort



F. A. Wiker and C. E. Lewis

that could be attributed to the growth of automatic oil heating and said that now that public acceptance has been attained a new problem of cost of operation has arisen and must be solved.

Public Asks About Cost

Homeowners have come to believe in oil heating as a means of securing *Indoor Comfort* but are now starting to ask questions about cost of operation of the equipment. Heating surveys have shown that there are many installations of oil fired units which need adjustment to attain most efficient operation and these jobs can cause repercussions. If a man has an oil fired furnace that is using more fuel than it should he is not likely to recommend oil heat to his friends.

According to Mr. Earl, the industry has solved the basic engineering problem of burning oil automatically and must now devote its full efforts to improving combustion efficiency and lowering operating costs.

Warm Air Heating Progress

Spokesman for the makers of warm air furnaces on the forum panel was Frank E. Mehrings, Meyer Furnace company. In order to show what progress the field of warm air heating had made in increased efficiency and lowered cost, Mr. Mehrings told the history of the research program of the National Warm Air Heating and Air Conditioning Association, which has been continuously in operation since 1918. He described the work done in research residences No. 1 and 2 and the plans for residence No. 3. This latest project will be a small, economy house set on a concrete slab and tests will be conducted in it during the coming heating season. The laboratory projects being conducted at the University of Illinois include: a furnaceblower project determining operating characteristics of a blower used in a warm air furnace; development of fittings for use on extended plenum systems, and a third study of the balance of air distribution in the duct system with varying air flow rates and varying inputs. A committee has been set up by the association to study the heating of low cost houses and field surveys are being conducted on heating with a warm air panel and heating houses with a crawl space. Mr. Mehrings defined a heating system as consisting of 1) the primary source of heat, 2) the distribution system which delivers that heat to the living quarters, and 3) the structure itself which is being heated to provide Indoor Comfort. He further voiced the belief that effective heating depends to a large extent on the structure itself. This being so, an attempt is being made to have houses designed so that adequate heating systems can be installed at the lowest possible cost.

In the matter of heating slab-type houses, nine different methods of heating with warm air, not applicable to any other construction, have been surveyed. One of the more interesting is peripheral heating in which the warm air passes through suitable ducts or trenches in the slab, usually extending completely around the periphery of the slab before entering the rooms. Some surprising results are produced with respect to slab temperatures and low floor-to-ceiling differentials. There are also other methods such as return air ducts imbedded in the concrete and return air space provided between the top of the slab and the bottom of the finished wood floor, placed on sleepers



1949 Officers

Seated left to right, R. S. Bohn, retiring president; Frederick C. Haab, newly elected chairman of the Distribution Division; A. T. Atwill, newly elected OHI president, and J. W. Owens, one of two newly elected OHI vice presidents. Standing left to right, T. A. Crawford, D. G. Leslie, P. K. Addams, newly elected chairman of the OHI Advisory Division, G. E. Hochstein and C. R. Collins.

on top of the slab. Closed panel heating installations have also been studied with warm air circulating through suitable channels or plenum areas within the slab, under the finished floor surface. Ceiling panel systems have also been studied.

A number of techniques for heating homes built over crawl spaces have also been observed. Some of these use the crawl space as a low basement and install conventional ductwork, suspended from the first floor joists. In some cases the heating unit (usually a horizontal gas fired unit) is installed in the crawl space. Mr. Mehrings said that manuals will be prepared containing all the test results, for the benefit of the entire warm air heating industry.

Last speaker of the day was Henry Wright, architect and consulting engineer, who talked on the need for cooperation between engineers, architects and manufacturers in the planning and construction of modern buildings, whether they be plants, offices or small homes. He spoke of the technical developments in the heating field, as well as the field of architecture, which are increasing the difficulty of design and construction.

Mr. Wright voiced the belief that in the past the manufacturers of heating equipment had been content to produce heating units of known thermal capacity and presume that they would perform efficiently, wherever they were installed. He said that he felt these manufacturers would have to give more thought to the performance of equipment under specific operating conditions and to the development of equipment capable of solving specific architectural problems. This trend toward integration of equipment and building design will furnish new opportunities for the firms which conform and change their methods. Mr. Wright said that old ways of building are giving way to the new, and manufacturers in the construction field must follow the trend.

The OHI convention adjourned after Mr. Wright's talk and the exposition closed on Friday evening.

EQUIPMENT DEVELOPMENTS

Suspended Furnace121

An oil fired suspension unit, completely assembled at the factory, is offered as a package unit, consisting of casing, heater, blower, motor, filters, and wiring harness. All connections to the oil burner, relay switch, and combination fan and limit controls can be made in a matter of minutes. The unit employs a two stage pump oil burner, a centrifugal squirrel cage blower, and constant speed motor with variable speed drive. Btu input ratings are 140,000 and 180,000.



Dimensions of the unit are 23 x 27 x 74 in.; weight is 575 lbs when ready to suspend. The cabinet is finished in baked enamel finish which is bonded to rust resistant metal.

Jackson & Church Co., Saginaw, Mich.

Portable Sprayer122

A compact, portable sprayer to handle any small industrial painting job is being introduced as the Payswell Sprayer. Completely self-contained, it operates with a builtin compressor, eliminating need for hose or separate motor. The enclosed motor operates from any 110 v electrical outlet, ac or dc, at a speed of 10,000 rpm, producing over 50 lbs pressure.

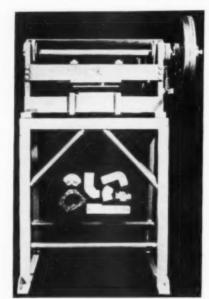


Use Coupon on Facing Page

Besides paints, enamels, and varnishes, the sprayer handles fire-proofing, liquid waxes, liquid plastics, rust inhibitors, and other sprayable liquids. Total weight is 4 lbs, including a quart container which is part of the unit.

Sellco Corp., 815 Andrus Bldg., Minneapolis 2, Minn.

A punch press, purposely designed to meet the individual punching requirements of the sheet metal industry economically, is known as the Husky Press. Its all welded construction allows for compactness, high strength, and comparative lightness in weight. Two models, 24 in. and 36 in., are available.



Dies for these presses may be obtained at considerable savings as compared to the cost of conventional types of dies.

Fallsington Manufacturing Co., Fallsington, Pa.

AC Arc Welders 124

Ac arc welders, which feature increased welding range and stepless precision current control, are now available in 200, 300, 400, and 500 amp models for indoor manual welding; in 750 and 1,000 amp models for machine and submerged melt

welding; and in special 200 amp model for light duty, job shop welding. The welders have an opencircuit voltage of 75 v.



Other features are the steel housings which afford protection for the operator; built-in power factor correction to keep down power consumption; and cool operation, attained by use of up-draft, fan assisted ventilation.

Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

Saw Attachment125

Improved reciprocating saw attachment introduced as the Super Saw. Gear driven with steel cut bevel gears, and cam and connecting rod action to produce reciprocating motion between electric drill by which it is operated and saw carrier which operates the blade.

Outstanding feature is blowing device which operates from crankshaft and acts as cooling medium



for the tool. Also utilizes waste air for blowing dust and chips from in front of cutting blade, facilitating performing work to close tolerances. Special blades are available for cutting through nails, plastered and metal lathed walls, for accurately cutting straight lines, angles, or circles in transite, and for cutting sheet metal up to 10 ga.

RCS Tool Sales Corp., Joliet, Ill.

Psychrometer Selector 126

Psychrometer selector simplifies work of determining air conditions from dry and wet bulb temperatures.

Figures on front of selector include relative humidities from 10 to 90 per cent; dry bulb temperatures from 32 to 100 F; wet bulb temperatures from 22 to 97 F; and dewpoint temperatures from —13 to 96 F. Reverse side contains characteristics of air such as sensible heat, volume of 1 lb or 1 cu ft of air, volume of vapor, total heat, grains of moisture, latent heat, and vapor pressure.

Made of long lasting special card stock in 4 x 8 in. pccket size; varnished for grease resistance.

Nickerson & Collins Co., 433 N. Waller Ave., Chicago 44, Ill.

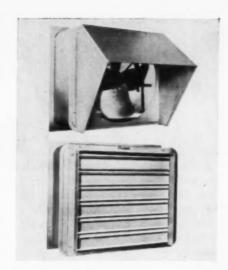
Gasket Material 127

Chrome Lock, a specially compounded and impregnated felt containing zinc chromate as a corrosion inhibitor, has many applications such as flange gasketing in forced air systems and moisture sealing in spray cooling units. This felt remains pliable indefinitely under pressure, maintains a positive seal for life of the installation, prevents corrosion, and inhibits electrolysis between dissimilar metals.



Available in thicknesses of 1/32, 1/16, ½, and ½ in.; widths, from 3/16 to 72 in. Engineering folder and sample available to persons interested in using this type of material.

Products search Co., 5426 San Fernando R. Glendale, Calif.



Belt driven fan for convenient mounting on outside window frame is available with either hood or automatic shutter. Offered complete with cord and plug, and pull chain switch.

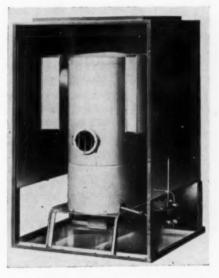
Two sizes are available: 24 in. model with air output of 4,500 cfm, ½ hp motor, and single fan speed of 620 rpm; 30 in. model with air delivery of 6,500 cfm, ¼ hp motor, and single fan speed of 500 rpm. For larger air delivery, the 30 in. model is available equipped with ½ hp motor, with a fan speed of 620 rpm, and delivery of 8,200 cfm.

Fans are easily installed by fastening to window frame by wood

Chelsea Fan & Blower Co., Inc., 1206 Grove St., Irvington, N. J.

Oil Fired Gravity Furnace . . 129

Oil burning warm air gravity furnace features Gopher burner designed to burn cleanly at any point in the firing range from pilot to full flame. Burner (vaporizing pot type) is equipped with a modulating float valve with limit control which feeds oil to the burner in exact proportion to the demands of bulb type thermostat.



Furnace is rated at 72,500 Btuh, and constructed of cold rolled, stainless, and aluminized steel. Dimensions: 53 x 34½ x 30 in.

Descriptive literature containing diagrams of furnace and details of burner construction is available.

American Gas Machine Co., 505 Front St., Albert Lea, Minn.

MAIL THIS NOW!

We will ask the manufacturers to send full particulars about the products and literature mentioned. Be sure to circle the items you want. **Equipment Developments** 121 122 123 124 125 126 127 129 128 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 **New Literature** 274 275 267 268 269 270 271 272 273 279 280 281 276 277 278 Manufacturer Jobber Dealer Name Company Address Address: AMERICAN ARTISAN, 6 North Michigan Ave., Chicago 2, Illinois

EQUIPMENT DEVELOPMENTS

Use Coupon on Page 107

Floor cabinet of welded steel construction is now available for



mounting Di-Acro bender, Model Nos. 2 and 3. Dimensions: 15 x 15 x 34 in.; working height, with bender mounted as illustrated, 38 in. Net weight, 90 lbs.

Two built-in shelves provide storage space for various bending mandrels. Com-

plete information will be obtained for readers.

O'Neil-Irwin Mfg. Co., 394 Eighth Ave., Lake City, Minn.

Machine-Cast Solder 131

Machine-cast bar solders produced by patented machines operating on die casting principles, are said to be free of many deficiences to be found in bars cast by hand.



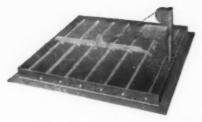
Features include uniformity of composition, elimination of segregation of solder elements, fine grain structure, and lack of voids in bars. As a result, Castomatic bars provide easier working properties and uniform melting temperature from one end of bar to the other.

Bars now available in standard 1½ lb size.

Federated Metals Div., American Smelting & Refining Co., New York 5. N. Y.

Ceiling Shutter132

New type ceiling shutter is equipped with mercury switch that synchronizes starting and stopping of the fan with the opening and closing of the shutter. Another safety feature is a fusible link which, in case of fire, closes the shutter and stops the fan.



Shutters are adaptable to both vertical and horizontal discharge of air. A number of units, installed in various parts of room or building, can be operated by a single fan in the attic. Fan will operate as long as one of the shutters remains open. When the last shutter is closed, the fan automatically stops.

Elgo Shutter & Mfg. Co., 2738 W. Warren Ave., Detroit 8, Mich.

Gas Fired Conditioners ...133

Two gas fired winter air conditioning units are especially designed for the low cost housing market. Both are fired automatically by natural, manufactured, mixed or LP gas. Input ratings are 90,000 and 115,000 Btuh respectively.



Units are delivered completely assembled and wired. Variety of optional equipment is available to meet desires of individual users.

Dimensions of models illustrated: $54 \times 54 \times 21$ in.

Jones & Brown, Inc., 441 Sixth Ave., Pittsburgh 19, Penn.

Pressure Oil Burner 134

Model GCN oil burner, with capacity from 3/4 to 21/4 gph, replaces manufacturer's Model S, same capacity. Improved design features patented clutch action which permits starting of fan before oil is delivered to firebox and allows fan to continue several seconds after combustion has ceased.

Other features include covered

access opening for easy cleaning of fan, covered observation port for checking electrode position and nozzle performance while burner is running, and micromatic adjust-

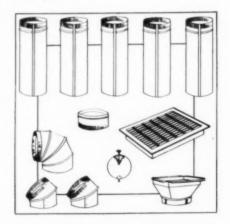


ment for air shutter. Motor and transformer are easily removable without disconnecting wiring.

Gilbert & Barker Mfg. Co., West Springfield, Mass.

Packaged Fittings135

All popular runs or basic parts of runs, necessary for complete furnace installation, are completely fabricated and assembled in a Modular Packaging System. Five different units consist of: Basement Basic Package, First Floor Package Complete, Wall Basic Package, Wall-One Opening Package Complete, Wall-Two Opening Package Complete.



Material packaged in this manner saves storage space, simplifies inventory, and aids in installations as all pieces are assembled ready for the job. Boxes used are strong corrugated containers which protect parts from breakage.

Berger Furnace Mfg. Co., 5920 Center Ave., Pittsburgh, Penn.



Portable Arc Welder Package...

Small, low cost, portable are welder, Lincwelder 60, is designed for repairing and fabricating in light gauge metals, and is especially recommended for use by heating, electrical, and sheet metal contractors. With a maximum output of 60 amps, the unit can be used for a variety of light gauge metal working jobs, as well as for joining heavier material.

Lincwelder 60 is industrially designed and made with electrical steel, mica insulation, glass covered copper windings. Operates off the standard 110 v light circuit fused for 30 amps; weight, approximately 50 lbs. Approved by Underwriters' Laboratories.

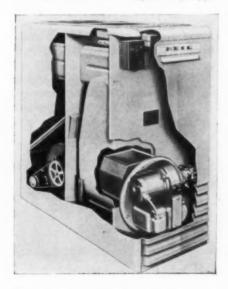
Welder is sold complete with 6 ft insulated cord and standard plug for light socket, protective welding head shield and lens, electrode holder and 9 ft cable, ground cable, and a supply of electrode and brazing rod.

Lincoln Electric Co., Cleveland 1,

Oil Fired Furnace 137

Oil fired winter air conditioning furnace with pressure atomizing burner has been designed for small home installation. Rated at 80,000 Btuh. Dimensions are 21 in. wide, 52 in. deep, 52 in. high.

Also available in same size are an oil fired unit with vaporizing type



burner, 70,000 Btuh, and a gas fired furnace, input rating, 100,000 Btuh.

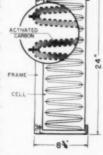
Important feature is interchangeability of burners between the units to permit switching to different types of fuel to take advantage of local supply situations.

The Heil Co., Milwaukee, Wis.

Air purification device, that can be installed and serviced with the ease of a dust filter, is a self-contained, cell type unit for air conditioning and ventilating systems.

Has capacity of 1,000 cfm, and low air flow resistance. Dimensions are 24 x 24 x 83/4 in.

The perforated FRAME filter element, of accordion pleat type construction, provides filter face of 28 sq ft in space less than 3 cu ft. The manu-



facturer expects a service life of up to three years for the unit, before reactivation of the purifying carbon is necessary.

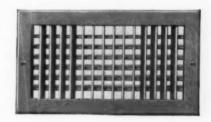
Cells may be installed in multiple, in either flat or V arrangement.

Details and specifications available in Dorex Bulletin 117-B.

W. B. Connor Engineering Corp., 114 E. 32nd St., New York 16, N. Y.

Improved Registers139

Addition to line of Streamliner registers for air conditioning and ventilating work. Series includes registers with single bank of vertical or horizontal adjustable bars, also double bank with front vertical and rear horizontal (or reverse). Available with single or multi-louver valves in back.



Featuring improved style of streamlined bars, hollow moulded, beveled on edges, and pivoted on special expansion inserts to create enough tension to keep bars tight but allow easy adjustment. Valve shutters also pivoted on rivets to prevent vibration at high velocities.

Descriptive Bulletin S-49 available to readers.

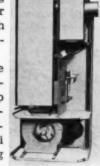
Auer Register Co., 3608 Payne Ave., Cleveland 14, Ohio.

Gas Fired Highboy140

Gas fired highboy, Model 90-H, has input of 90,000 and bonnet output of 72,000 Btuh. Fully approved

by AGA for all gases in including LP gas, and for both low and high altitude operation.

Fountain type gas burner features stepped up efficiency resulting from air shutter and venturi design. Casing construction in-



corporates heavy gauge corner posts welded to main casing side sheets

EQUIPMENT DEVELOPMENTS

Use Coupon on Page 107

for extra strength.

Side filter mount which can be cut into either side of the casing is standard equipment; casing type air boot or filter base is available as an extra.

The Meyer Furnace Co., Peoria,

Oil Fired Furnace 141

Oil fired warm air units, Climate Master Models 80-V and 80-P, are rated at 80,000 Btu bonnet delivery,



800 cfm. Units measure only 25½ in. square, 65 in. overall height. Return air connection may be made to 20 x 25 x 2 in. air filter on left side or bottom of unit without use of additional or special filter frames. Both units are factory assembled

excepting burner and controls on Model 80-P (illustrated).

Model 80-V, equipped with mechanical draft vaporizing burner; cabinet available in coppertone or white baked enamel finish. Model 80-P, with high pressure burner, is available in white baked enamel finish.

The Hess Co., 1855 S. 54th Ave., Chicago 50, Ill.

Soldering Flux142

Wetoil, a stable, non-acid formula soldering flux. Now available with addition of new agent, known as Majoy, developed to penetrate dirt,



oil, grease, and other extraneous matter, coating metal surfaces so that uniform flux action takes place. Results are greater adhesions of solder, making a stronger bond with greater tensile and shear strength.

Copper, brass, tinned steel, and terne plate are among the metals on which Wetoil is said to be a perfect fluxing agent.

Farrelloy Company, 1258 North 26th St., Philadelphia 21, Penn.

Air Wall Heating is introduced as a new heating method which blankets cold outer walls of a room with warm air.

Special registers and grilles (see illustration) direct forced air upward in fanlike pattern in front of the wall. By warming the wall, this system is said to produce sensation of radiant heat and bring about warmer floor temperatures. Small stovelike ducts used with this system dampen furnace noises, and register louvers are designed to diffuse air silently. Positive shut off on register prevents any whistling when closed.



For easy installation, standard pipes and elbows, plus factory built register boxes and grilles, are offered as a package heating system, which can be used with either gas or oil fired GE furnaces.

General Electric Co., Air Conditioning Dept., Bloomfield, N. J.

Pipe Cleaning Brushes . . . 144

Specialized brushes for cleaning pipes, tubing, and copper fittings of dirt and corrosion. Designed to eliminate time consuming method of cleaning pipe and fittings, inside and out, with sand or emery paper before soldering or brazing.

Complete assortment of brushes

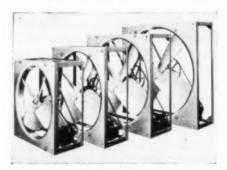


in all popular sizes is available, as well as a highly specialized line of brushes for cleaning the outside of copper tubing.

Schaefer Brush Mfg. Co., Milwaukee, Wis.

Cooling Fans145

Efficient cooling for homes, offices, stores, and factories is provided by Niteair panel units which expel stuffy air and draw in cool outside air. Units are installed in walls, and air is sucked from panel through venturi past the fan blades.



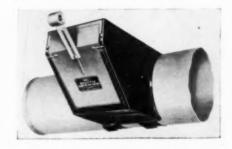
Sizes range from 30 in. to 48 in. models, with air delivery from 7,611 to 17,564 cfm. More detailed information available on request.

Lau Blower Co., Dayton 7, Ohio.

Beg Your Pardon . . .

In our April issue, an illustration of a barometric draft regulator manufactured by Skuttle Manufacturing Co., Detroit, Mich., was printed upside down.

We are illustrating the regulator in its correct position, and we regret any confusion the previous error may have caused.—ED.



NOW AVAILABLE FOR ROOFS ON NEW CONSTRUCTION

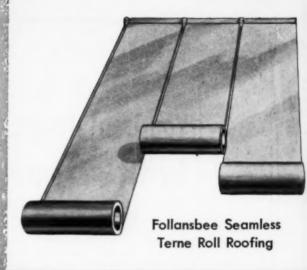
CONDUCTORS

Spouting **Gutters**

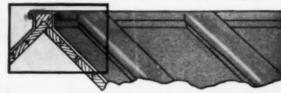
Valleys

WEATHER-SEALING

Flashings Ridges Cornices



Used in Batten Roof Design









Follansbee Seamless Terne Roll Roofing

20-lb. Coating Weight • 50-ft. Continuous Rolls

Follansbee Seamless Terne Roll Roofing, in the popular 50-foot continuous roll, may now be applied on new construction as well as for maintenance and replacement. Government Regulations on the utility-weight 20-lb. coated Follansbee Seamless Terne Roll Roofing have been relaxed.

You can use Follansbee Seamless Terne Roll Roofing on your next roofing contract. 50-foot rolls in 20-lb. coating are now available thru leading distributors.



FOLLANSBEE STEEL CORPORATION

GENERAL OFFICES, PITTSBURGH 30, PA.

COLD ROLLED STRIP * ELECTRICAL SHEETS * POLISHED BLUE SHEETS

SEAMLESS TERME ROLL ROOFING

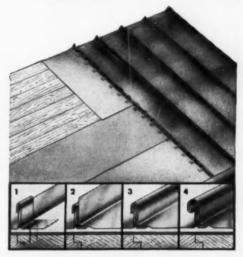
Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee. Sales Agents—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston, Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada.

Plants—Follansbee, W. Va., and Toronto, Ohio.

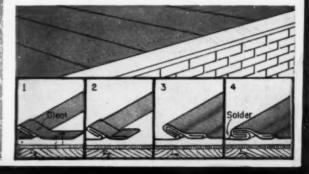
Follansbee Metal Warehouses — Pittsburgh, Pa.,

Rochester, N. T., and Fairfield, Conn.

Standing Seam Construction Detail



Flat Seam Installation



You can always tell a **PETRO** owner by the "company" he sells...for **YOU!**



Let there be a *Petro* in the basement and, sure enough, the proud homeowner leads his guests to it every time. He likes to let others in on "the best investment he ever made". His enthusiasm just naturally bubbles over as he tells about the fuel-money he's saving...as he exclaims over the luxuriant comfort he is enjoying..."and all because you sold him a *Petro*".

What better way to build your business for you than that? There's a complete line of Petro heating equipment... oil burners, boiler-burner and furnace burner units, water heaters. Check with the Petro heating and plumbing jobber in your wholesale area.

PETROLEUM HEAT AND POWER COMPANY Stamford, Connecticut

Makers of Good Oil Burning Equipment Since 1903
REFINERIES... FUEL OIL STORAGE AND DISTRIBUTION TERMINALS
NATIONWIDE OIL BURNER SALES AND SERVICE FACILITIES

WHAT ELSE DO YOU GAIN WITH PETRO?

OUTSTANDING SELLING FEATURES, such as patented "Tubular Atomization" assuring your customer more heat from less fuel.

VIGOROUS PROMOTION THROUGH NATIONAL ADVERTISING, reaching every oil burner prospect in your territory...building up a preference for Petro and helping pre-sell you as a leading heating contractor in your community

PRODUCT DEPENDABILITY, reflecting over 45 years' oil heat "know-how" of the world's oldest, largest exclusive oil-heat equipment maker.





NEXT TIME you hear that old, sad refrain, "can't afford it," that's the time to tell your prospect about Great National's three great new evaporative cooling units... that practically anyone

Tell him how simple these units are . . . no coils . . . no compressors . . . no condensers . . . nothing to get out of whack. Tell him how easy they are to install . . . just a couple of simple plumbing and wiring connections to make. Tell him he can practically forget about maintenance expense. All there is to it is an occasional half-hour clean-up job. It's easy to see that everything about these efficient evaporative units will save him

werything about these efficient evaporative units will save him money . . . and do a sound, solid job of cooling, too.

So don't sit still for the old "can't afford it" routine any longer. Make a sale and a profit and a friend by selling lowcost, long-life, efficient Great National Evaporative Cooling Units.



GREAT NATIONAL KOLD-AIRE

The comfort cooling unit that's simplicity itself. It cools, cleans, washes, filters and circulates 100% fresh air at super-low cost. Its low speed, high output blower is quiet and efficient. Double capacity recirculating pump saves water yet delivers twice the volume actually needed for complete saturation of filter mats. Made in capacities from 3500 to 13,000 cubic feet per minute. cubic feet per minute.



GREAT NATIONAL **EVAPORATIVE KOOLER-AIRE**

Kooler-aire has one of the greatest advances ever made in evaporative cooling...the exclusive Gyro-Spray, which saturates the filter mats with a whirling, drenching spray of water. This spraying action also keeps mat surfaces clean. A recircu-lating pump keeps water consump-tion low. Two sets of mats not only cool the air but keep water out of the blower



GREAT NATIONAL DE-HU-MATIC

Here's the "only one of its kind" evaporative cooler. It creates cool comfort in any climate . . . under any temperature and humidity conditions. Its automatic dry and wet bulb thermal controls keep humidity comfortably low even on "muggy" days. A recirculating pump, operating in conjunction with the De-Hu-Matic valve, insures low water costs and complete thermal control.

For full information on these evaporative cooling units send coupon,

GREAT NATIONAL AIR CONDITIONING CORPORATION

A subsidiary of UNITED STATES AIR CONDITIONING CORPORATION

342 Oklahoma Natural Building

Oklahoma City, Oklahoma

Great National Air Conditioning Corporation 342 Oklahoma Natural Bldg., Oklahoma City, Okla.

Please send me full information on Evaporative Cooling Units.

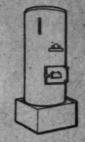




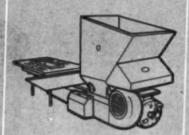
Model B-15 hopper type bituminous stoker. Features high and low feeds for houses up to 5 rooms.

Model BD self-feed, commercial type stoker. In copacities of 75, 100 and 150 pounds of coal per hour.





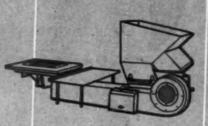
Model 550C—Coal-fired boiler. Convertible to gas or oil fuel.



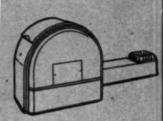
Model H 225 industrial hopper type stoker.



Model 510-OW-Oll or gas-fired packaged unit boller.



Model N 630 Industrial hopper type stoker.



Model Z hopper type bituminous staker. For houses of 6-12 rooms.

Profitable... yesterday...today... and tomorrow

Thousands of successful heating equipment dealers have built and maintained their businesses through the sale of Fairbanks-Morse heating equipment. And they look to the future well aware that the quality and dependability of Fairbanks-Morse stokers, furnaces, boilers and other heating equipment are their best assurance of continued sales and profits.



FAIRBANKS-MORSE

A name worth remembering

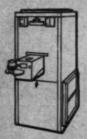
DISSEL LOCOMOTIVES . DISSEL ENGINES . STOKERS . SCALES . MOTORS . GENERATORS PUMPS . RAILROAD MOTOR CARS and STANDPIPES . FARM EQUIPMENT . MAGNETOS



Model 70-OH-Ollfired packaged unit utility furnace.



Model 90CG—square case gravity furnace.



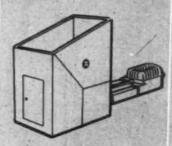
Model 80-GH—Gasfired packaged utility furnace.



ModelAH 400 hopper type anthracite stoker, with automatic ash removal.



Model 120CF—Forced winter air-conditioning furnace.



Model D 150 hopper type commercial stoker.



Model FM2—Conversion oll burner.



Model AB 600 self-feed anthracite stoker, with automatic ash removal.

ORIN .

fired

11505

SHALLO-WELL

sets a

NEW

STANDARD IN OIL-FIRED FLOOR FURNACES

Model 0-70 Super, completely automatic with forced draft fan.

Three basic models are included in the NEW Oran Shallo-well line, each an outstanding value in its price range. The illustrated model 0-70 Super is completely automatic with forced draft fan, and embodies the finest construction available today. The model 0-60 Special also features completely automatic control with forced draft fan. Model O-50 Standard is for natural draft, manually controlled, with automatic controls and forced draft fan as optional equipment.

Besides top-notch quality and performance, all Oran Shallo-well furnaces feature beautiful baked enamel finishes for effective display. Their eye appeal gives you real merchandising and sales help. Oran sells through regular trade channels with 100% jobber cooperation. Write, wire or telephone us today for complete information on the fast-selling NEW Oran Shallo-well line—it will mean extra profits for YOU!

TRUE SHALLOW-WELL CONSTRUCTION—ONLY
34 INCHES DEEP. Greatly reduces building costs
on new construction, and simplifies installation
in existing structures.
In existing structures.

ORAN AUXILIARY COLD
in existing structures.

EXCLUSIVE ORAN AUXILIARY COLD
TURN. Only bedrooms and other hard-to-heat
cold air from bedrooms and other macrowiding more uniform
told air from providing more uniform
cold air from providing more uniform
told air providing

ORAN COMPANY

2222 S. THIRD ST., COLUMBUS 7, OHIO



187,000 CUBIC FEET OF AIR PER MINUTE is this large fan's maximum capacity ... size: 16 feet high, 12½ feet wide, 91/2 feet deep — weight, 15,800 pounds. It is now operating in a woolen mill down South.

BUILT HEAVIER THAN COMMON PRACTICE, Clarage units - both large and small — are equal to the most severe conditions you can imagine in connection with air handling or conditioning installations.



EQUIPMENT for many of the biggest, most important air handling jobs in this country is furnished by Clarage. Through the years architects, engineers, contractors, users have come to rely on Clarage equipment for long time service at operating and upkeep costs surprisingly low. May we work with you on your next project in our field?

HEADQUARTERS for Air Handling and Conditioning



APPLICATION ... IN ALL PRINCIPAL CITIES

Kalamazoo, Michigan

PROCESSES



It's TIME to get tough about heating VALUES!

• Some heating men shudder at the thought of a "buyers' market". Wiser ones welcome its stabilizing influence.

Superfex Furnace dealers, wisely, have the line that SELLS BEST in a critical market. The tougher a customer gets about his money, the easier it is to sell quality. The PLUS features of Superfex, the things that no other furnace has, provide Superfex dealers with the greatest heating value in any kind of a market. Get down to the facts . . .

LOOK at what Superfex gives you

CHOICE of the exclusive "Homogen-Air" three-stage fire with synchronized blower*; two-stage system or gravity furnaces.

CHOICE of oil or gas fired lines.

CHOICE of basement furnaces, floor furnaces, high-boys or suspended units.

CHOICE of complete furnaces or conversion burners.

CHOICE of vaporizing or gun-type oil burners.

CHOICE of natural, manufactured or L.P. gas burners.

HIGHEST QUALITY construction; Stainless steel oil burner parts; High efficiency heat exchangers; Double-wall casings of heavy gauge steel; Sealed-to-steel baked enamel finish.

AND . . . heating engineering service backed by the finest development laboratory in the industry.

MODEL 62 Gas 100,000 B. t. v. input



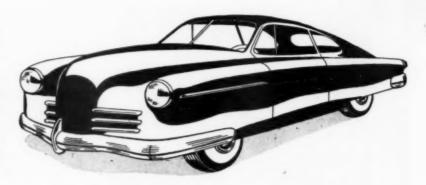
*The Superfex "Homogen-Air" is the only system that continuously delivers the right amount of heat from a three-stage fire, and continuously mixes and circulates it. Gives a homogenous, even heating with never more than 4° difference, floor to ceiling. The most critical buyer likes the added VALUE in this extra comfort.

Superfex FURNACES

GAS OR OIL

Made by PERFECTION STOVE COMPANY . 7095-C Platt Avenue . Cleveland 4, Ohio

9n STURDIER **FASTER - BETTER AUTOMOBILES**



OR MODERN · COMPACT · EFFICIENT

AIR CONDITIONING FITTINGS

MODERN DESIGN AND MANUFACTURE BRING YOU THE World's Finest!

DEALERS ...

EQUIPPEDATA

OHE PIECE

Investigate the complete ADELTA line of Air Conditioning Ducts and Fittings.

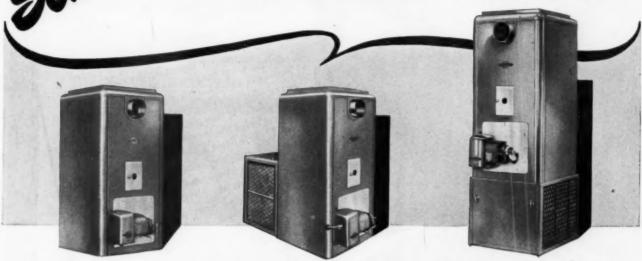


√ Improved Combination Units

√ Double Seamed—Leak Proof!

ADELTA MANUFACTURING CO. INC. 21st and Ellsworth Sts., Phila. 46, Pa.

NOW! Small Home and Builder Market with these NEW LOW-COST DELCO-HEAT CONDITIONAIRS



New Delco-Heat oil-fired gravity warm air furnace with a new and dependable vaporizing-type, forced-draft burner. A wonderful value! Now even the smallest homes can have all of the advantages of top quality automatic Delco-Heat

New Delco-Heat oil-fired forced warm air furnace—with (1) vaporizing-type forced-draft burner, or (2) Delco-Heat pressure atomizing burner with the exclusive "Rotopower" unit. For lowceilinged basements and installations where head room is restricted! Another new Delco-Heat oil-fired forced warm air furnace compactly designed for utility room and basement installations—or where floor space is limited. Available with (1) vaporizing-type, forced-draft burner—or (2) the famous Delco-Heat pressure atomizing burner!

Here are five brand new Delco-Heat oil-fired Conditionairs—especially engineered to meet the requirements of small home owners and builders! Five new Conditionairs—in both gravity and forced warm air models—with either vaporizing forced-draft or pressure atomizing-type burners! They're easy to install, easy to service—and because all models have the same "basic unit" construction, they're economical for you to stock!

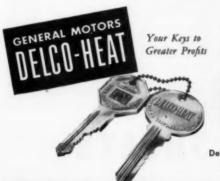
Most important—these new Delco-Heat Conditionairs, with their many outstanding features, will give your value conscious customers exactly what they want in automatic home heating . . . dependability, comfort, convenience and economy!

These new Conditionair models are perfect companions to the other great Delco-Heat products—conversion Oil Burners, oil-fired Conditionairs, gas-fired Conditionairs, oil-fired Boilers, automatic Coal Stokers, and oil and gas-

fired Water Heaters. Now the Delco-Heat line is more complete, more valuable than ever. Now, when you sell Delco-Heat—a real General Motors' value—greater profits can be yours, because:

- You'll be selling a name that's a household word—a name synonymous with value.
- 2. You'll have a complete line of oil, gas and coal-fired home heating units.
- 3. You'll be backed by research and engineering that will keep the products you sell out in front.
- 4. You'll have the help of an advertising and sales promotion program that really works!

For full information about the advantages of a Delco-Heat franchise, write to Delco Appliance Division, Dept. AA-7, General Motors Corporation, Rochester 1, N. Y.



Delco-Heat Conditionair (Oil or Gas-fired)



Delco-Heat Conversion
Oil Burner



Delco-Heat Oil-fired Boiler



Delco-Heat Automatic Stoker

Manufacturers of Delco Water Systems for farms and homes —Fractional Horsepower Electric Motors — Electric Automobile Clocks

The brand most in demand



CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK



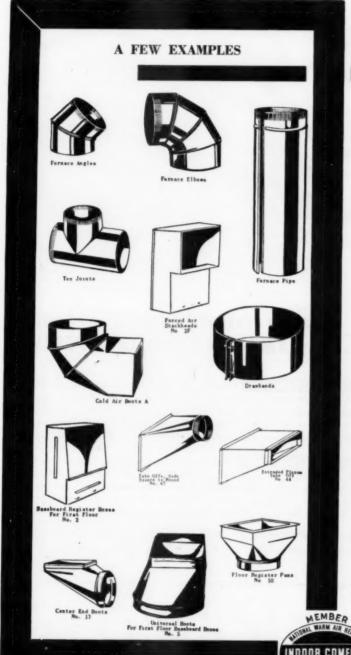
U·S·S STEEL SHEETS

0.880

UNITED STATES STEEL



News from Ohio Valley!



Complete Line of
Pipes, Ducts and Fittings
for Warm Air Heating
and Air Conditioning

Available

THROUGH LEADING WHOLESALERS

GIVE YOUR CUSTOMERS quality service plus quality furnace fittings as provided by the Metal Manufacturing Division of Ohio Valley Hardware & Roofing Company. In our modern plant, every effort is made to produce the finest products for you to sell profitably with satisfaction.

Rather than rest on its 39 years' experience, Ohio Valley constantly improves production with new facilities, designed and built to assure its customers of always selling the best products at the lowest possible consumer cost. Uphold your reputation for handling the best, by selling Ohio Valley!

ON REQUEST WE WILL SEND YOU
Free Illustrated Price Catalog, and name of
your nearest Ohio Valley Distributor, where you
can purchase these quality fittings.

For larger sales from smaller stocks,

Write Now!

Metal Manufacturing Division of

OHIO VALLEY HARDWARE & ROOFING COMPANY

Evansville 2, Indiana





You get **BIG** jobs... and more of them...when you know the facts about...



EASY-WORKING SOFT TEMPER "MONEL" ROOFING SHEET



WORKER EXAMINES an assortment of Monel roofing parts fabricated by Limbach Company, Pittsburgh, Pa. Installed on a chemical manufacturing plant, these Monel gutters, flashings, downspout straps and eaves boxes are successfully resisting destructive fumes, smoke and lowland dampness.



ON THIS JOB in Detroit, Michigan, Monel batten pans are being cleated down with Monel clips by a Wallace Candler, Inc., roofer. Monel Roofing Sheet made possible a substantial reduction in sheet thickness.



FOR PERMANENT PROTECTION, ald gutters on this building were replaced with gutters of corrosion-resistant, economical Monel Roofing Sheet. Photo shows worker soldering a riveted seam in gutter lining. Fabricator, Rupertus Sheet Metal Works, Washington, D. C. reports: "Some of the gutters were 55" in girth, but Monel was easy to work with and install".

How large a portion of your business is in profitable big roofing jobs? Public buildings, hospitals and factories represent eight, ten, twelve or more weeks of steady work. Do you want to know how to get more of this business?

Learn all the facts about the new easyworking, soft temper MONEL* Roofing Sheet. This economical nickel-copper alloy is being written into more and more specifications for large buildings, where "life-of-the-building" roof service and minimum maintenance costs are required.

Once you're ready to bid on Monel jobs, you get more big roofing jobs. Monel Roofing Sheet is used more for these jobs than for any other type of work.

Economical Protection

And there is good reason why Monel should be specified for these big jobs. For one thing, a Monel roof can be designed, fabricated and applied at a reasonable cost...in fact, the cost is surprisingly low. That's because the superior corrosion resistance of Monel Roofing Sheet, together with its high strength and low rate of heat expansion, often make it possible to use thinner gauge sheet.

On several recent jobs, Monel's excellent properties permitted a reduction of 25% in thickness for batten seam roofing. Even greater reductions have been made in louvers, flashings, gutters and leaders.

So go after Monel jobs! It's an easy

way to make BIGGER jobs a larger part of your business.

Easily Fabricated

And there's still another important advantage in Monel Roofing Sheet for you—the ease and quickness with which it can be cut, bent, formed, seamed and soldered. Roofers say it's a cinch to work with—especially because it can bend around sharp corners and intricate forms without cracking.

Send for Test Sample

You can prove all this to your own satisfaction. Get a free test sample—and put it through its paces. You'll agree that Monel has everything you want in a roofing metal.

With your test sample, we'll also send our two new bulletins, Monel Roofing Sheet—Basic Application Data and The Soft-Soldering of Monel Roofing Sheet. The first reviews the properties and characteristics of Monel Roofing Sheet, tells how to use it to best advantage, gives information about cost, and discusses installation methods. The second covers soft-soldering for principal sheet metal building jobs.

You'll find both bulletins helpful. And you can get them—along with your test sample of Monel Roofing Sheet—by just sending us the coupon below. Mail it—now.



THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street, New York 5, N. Y.

*Reg. U. S. Pat. Off.

Mail this coupon for FREE test sample and helpful bulletins!

Arch	nitec	tural Sect	tion		
The	Inte	ernational	Nickel	Company,	Inc
7 V	Vall	Street, N	ew Yor	k 5. N. Y.	

I want to know more about Monel Roofing Sheet so that I can bid on those big jobs you talk about. Please send me a free test sample of Monel Roofing Sheet and your two new bulletins.

NAME......AA-7-

CITY......STATE.....

MONEL*... for the life of the building

SUPER SAW May Be Obtained From Any of Dealers Listed Below:

SPECIAL GOVERNMENT REPRESENTATIVE Fred W. Fisher Company 204 Shepherd Street Chevy Chase, Maryland

George F. Wheelock Co. 3013 Second Avenue, S. Birmingham S, Alabama

CALIFORNIA

Southwest Supply Company
S46-848 State Street
San Diego 1, California
Miller & Stern Supply Company
1435 Folsom Street
San Francisco 3, California
Sacramento, Oskland,
Pacific Plumbing & Htg. Supply Co.
1015 Folsom Street
San Francisco 3, California
R. M. Bracamonte & Company
No. 84 South Park
San Francisco, California

M. L. Foss, Inc. 1901-1919 Arapahoe St. P. O. Box S7 Denver 1, Colorado

CONNECTICUT

Modern Equipment Corp.
438 Orchard Street New Haven 11, Connecticut
(Formerly George B. Sprick)

Knives and Saws, Inc. 516-24 North Cicero Avenue Chicago 44, Illinois Walter E. Selck and Company 223 West Hubbard Street Chicago 10, Illinois

Richmond Supply Corporation

34 North Seventeenth Street Richmond, Indiana
J. R. Hahn Company

31 East Georgia St. Indianapolis 4, Indiana
7 Young Heating Supply, Inc.
416 South William Street South Bend, Indiana
7 Tri-State Heating Supply, Inc.
234-236 Murray Street Fort Wayne 5, Indiana

Chas. W. Riebel Company 209 West Main Street Louisville 2, Kentucky

MASSACHUSETTS

352 "C" Street South Boston 27, Mass.

MICHIGAN

Corner Kalamazote and Hosmer Lansing 12, Michigan

342 Market Avenue, S. W. Grand Rapids, Michigan

Volk Stamp & Stencil Co.

151 East Jefferson Avenue Detroit 28, Michigan

MINNESOTA

Minneseta Steel Supply Co. 207-Sixth Street Northeast P.O. Sex 1126 Minnespelis 13, Minneseta

A. G. Brauer Supply Co. 2100 Washington Blvd. St. Louis 3, Misseuri

Standard Furnace & Supply Co.
411-17 South 10th Street Omaha S, Nebraska
Burke Brothers Electric Co.
415 Elia Street Beatrice, Nebraska

NEW JERSEY
E. R. Meyers Company
601 Tatem Avenue Collingswood, New Jersey

COOLED

PATS. PEND.

For any air conditioning, warm air heating, or sheet metal job, you will find SUPER SAW practically indispensable. Without drilling a starting hole, it "CUTS LIKE A BREEZE" through almost any material up to 10-guage metal. Many users tell us it quickly pays for itself in time, labor, materials and trouble saved.



Starting opening for wall register without a starting hole. SUPER SAW quickly rips through practically any thing and everything.

SUPER SAW May Be Obtained From Any of Dealers Listed Below:

Binghamton Hardware Company 101 Eldredge Street Binghamton, New York D. M. Byrne Supply Company 121 Emerson Street Kingston, New York H & L Oil Burner & Heating Supply Corp. 1077-79 Coney Island Ave., Brooklyn 30, New York Pauliin Equipment Co., Inc. 8 Church Street Buffalo 2, New York

Marinag International, Inc. 402 East 44th Street New York 17, New York

HORTH CAROLINA

Colonial Roofing & Construction Co., Inc. 808 West Morehead Street, Charlotte, North Carolina P. O. Bex 3041 Service Corporation 2508 Lucena Avenue Charlotte 3, North Carolina

OHIO

The Morryweather Co.

211 South Broadway
Banner Repair Parts Co.

103 East Indianola Ave. Box D. Bo. Side Post Office
Anderson Supply Co.

The Office Probat Supply Co.

The Office Brain Company
State Monumer Metal Mfg. Company
Earnshaw Sheet Metal Supply Company
210 N. Willia Avenue
Mansfield, Ohio
S629 Madion Recompany
Section Company
Wesco Corporation
S629 Madion Recompany
Section Metal Supply Company
Wesco Corporation
S629 Madion Recompany
Section Metal Supply Company
Section Metal Supply Company
Wesco Corporation
S629 Madion Recompany
Section Metal Supply Company
Wesco Corporation
S629 Madion Recompany
Section Metal Supply Company
Orys Wesco Corporation
S629 Madion Recompany
Orys Westers Inc.

S63 East Goodale Street
Ohio Staple Machine Service
Cincinnati 26, Ohio

Northwest Furnace Company 911 North West Hoyt Street Portland, Gregon & Johnson Heating Supply Company 725 North East 25th Avenue Portland 12, Gregon

PENNSYLVANIA

320 North Madieon Street Allentown, Pennsylvania A. H. Johnson Co. 38-240 First Ave. Pittsburgh 22, Pennsylvania McClure-Johnston Company 14th & Smallman Streets Pittsburgh 22, Penn.

TEXAS

TEXAS

Eugene Polk

2919-21 Canton Street

Morrison Specialty Company

3019 Alamenda Avenue

El Paso, Texas

WASHINGTON
Pacific Coast Heating & Appl. Co.
Pacific Coast Terminals, Ft. of Main St.
Seattle 4, Washington
Cascade Distributors, Inc.
1016-1st Avenue, South Seattle 4, Washington
O'Neill Machinery Company
1011-13 Howell Street Seattle 1, Washington

WISCONSIN Auer Steel & Furnace Supply Co. 3103 West Auer Avenue Milwaukee 10. Wisconsin

Glowenie & Blitz, Ltd. 750 Laau Place, P.O. Box 2609 Honolulu 3, Hawaii

CANADA

F. F. Barber Machinery Co. 187-191 Fleet Street, West Toronto, Canada

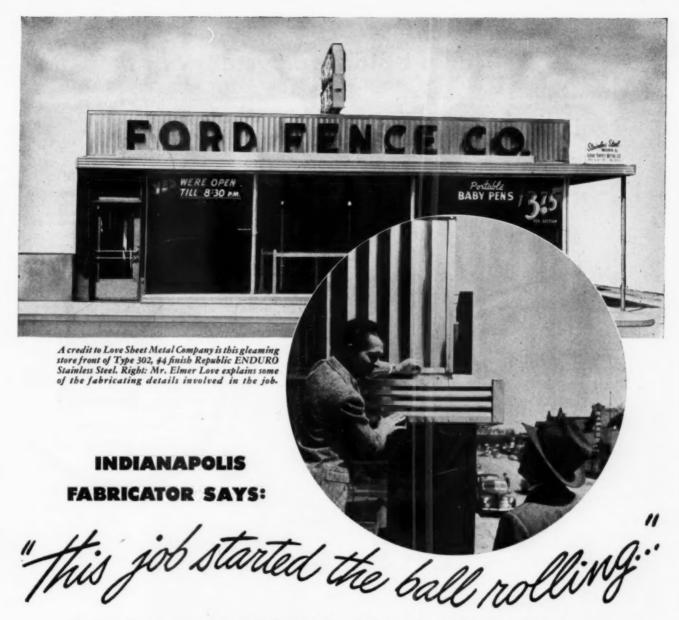
SUPER SAW is light, very rugged,

has no torque or spin—has blowing attachment that keeps it cool and removes sawdust and chips from in front of blade, giving FULL VISIBILITY for cutting on line. All bearing surfaces may be quickly replaced at low cost, giving lifetime wear to this truly remarkable tool. It is equipped with heavy oilite bearings and high speed ball. Gears of spiral cut steel run in a bath of non-fluid oil, and piston carrying saw is heat-treated and ground to give hard-wearing surfaces and precision fit.

SUPER SAW is made in two models—one which connects to drill by removing drill chuck and screwing SUPER SAW on shank of drill, the other model connecting to drill in same manner as a drill bit is inserted in drill chuck. SUPER SAW is priced within reach of ANYBODY, and EVERYBODY can use it. See one of our dealers listed on this page, or ask us for any details you wish to have. There are a limited number of dealer territories open, and your inquiries are invited.

RCS TOOL SALES CORPORATION

Joliet, Illinois Chalstrom Bldg.



Mr. Elmer Love, owner of one of Indianapolis' leading sheet metal shops, has a theory that one good job always brings in another. In his own words:

"Since this business was founded by my father, more than thirty years ago, we have always taken pride in our stainless steel fabrication. From experience, we have learned that one good stainless steel job has a habit of bringing in other orders for the same type of work.

"That's why we were particularly anxious to land the Ford Fence store contract—the first of its type in this area. Not only did we get valuable experience from this assignment—already we have had several inquiries from other store owners.

"As far as I'm concerned, this job started the ball rolling . . . and you can be sure that I'm not going to let it stop now!"

Would you like to receive a valuable stainless steel fabricating guide? Write today for your free copy of Republic's booklet, "The Fabrication of Republic Enduro Stainless Steel."

REPUBLIC STEEL CORPORATION

Alloy Steel Division . Massillon, Obio

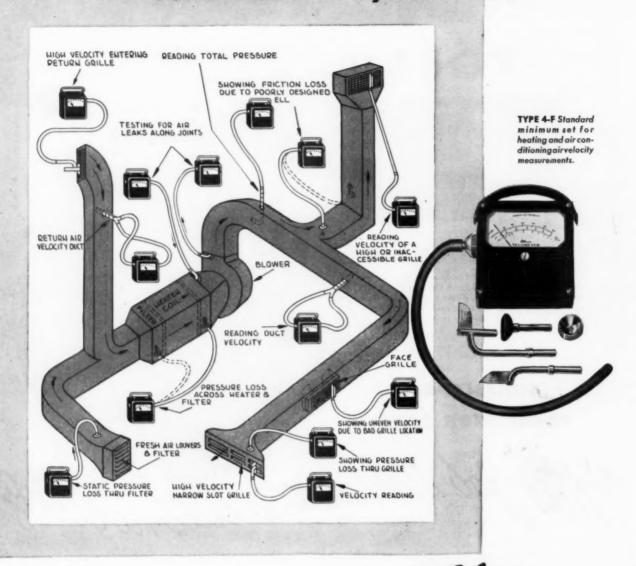
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York

Enduro STAINLESS STEEL

V Check ALL 12 advantages: • RUST AND CORROSION-RESISTANCE • HEAT-RESISTANCE • HIGH MELTING POINT • LOW COEFFICIENT OF EXPANSION • HIGH STRENGTH • GOOD DIMENSIONAL STABILITY • NO METALLIC CONTAMINATION • EASY TO CLEAN • EASY TO FABRICATE • EYE APPEAL • LONG LIFE • LOW END COST



For a balanced system



Use the instant direct-reading *Almor* VELOMETER!

The type 4-F Velometer—especially designed for balancing a ventilating system. Furnished with standard jets, as illustrated—complete with carrying case and instructions. It will quickly pay for itself in convenience, accuracy and greater speed.

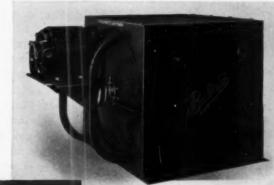
A LOOK at this drawing and you'll get an idea of the wide usefulness of the Alnor Velometer. For checking and maintaining old systems —and for help in making new installations—the Velometer is an all but indispensable instrument. It is the only instantaneous direct reading air velocity meter! No charts or calculations required—it's easy to understand, easy to use. As it has for thousands, it can simplify and speed up all your air conditioning and ventilating work.

Only \$8250 f.o.b., Chicago • USE THIS COUPON!	PRECISION INSTRUMENTS FOR EVERY INDUSTRY
Illinois Testing Laboratories, Inc. Room 538, 420 North La Salle St., Chicago 10, Illinois Send me a copy of Bulletin No. 2448-G Send me Velometers at \$82.50 each. (Enclose check, money order, or purchase order.)	ILLINOIS TESTING LABORATORIES, INC.
Nome Company Name City Zone State	Chicago 10, Illinois

Built to install easily and keep delivering without trouble

"BUFFALO" "L" BREEZO FANS

We make no revolutionary claims for "Buffalo" Fans. We do know that they're giving good, satisfactory service, from the viewpoint of both user and installation man. The "L" Breezo, for example, is a rugged, complete unit for exhausting gases, fumes, vapors from hoods and vats. Motor is PROTECTEDseparated from air stream. 12" to 36" sizes. Capacities up to 7300 cfm at 1/4" static. Look into this popular fan for your next exhausting job!



"BUFFALO" BREEZO FANS

For a simple, satisfactory smallarea ventilation installation, you can't beat the Breezo! Has rigid flangeedge square frame with pressed knockouts. Shafts, bearings and hubs are strictly heavy-duty. Blades, motor brackets and arms are die-stamped of good, heavy metal. Motors are

of top grade standard make, resilientmounted. 6 sizes, 8" to 24". As users say, it's a "lot of air for a little money".



"BUFFALO" BELT-AIR FANS

Here are the sturdy, efficient fans that are giving quiet, dependable ventilation in so many large-area industrial and commercial installations! Sizes start where the Breezo leaves off — 24" to 48" for 4400 to 19,000 cfm, free air delivery. And like the Breezo, there's nothing

"flimsy" about these trouble-free, easily installed belt-driven fans. You're SURE of best results with "Buffalo" Fans!

FACTS TO MAKE YOUR JOB EASIER!

FAN ENGI-NEERING, 5th Edition, pocket size, has 808 pages of authoritative answers to YOUR air problems. Easy to read, Section

on disk fans and every other type. For better results and easier results, send check or money order now. Only \$6.00 Postpaid.

Write for Your FREE COPY!



Bulletin 3222-F, above, gives you all the construction and performance data on "Buffalo" disk fans, as well as data on "Buffalo" Electric Blowers-Exhausters and Baby Vent Sets -good, practical information for you to have on hand. Write now for your copy of Bulletin 3222-F!



504 Broadway Canadian Blower & Forge Co., Ltd., Kitchener, Ont. Branch offices in all Principal Cities

BUFFALO, N. Y.

VENTILATING FORCED DRAFT AIR WASHING COOLING

AIR TEMPERING HEATING

EXHAUSTING INDUCED DRAFT PRESSURE BLOWING

Or Equal?

Specifications for Air Diffusers

There shall be installed at each point indicated on the drawing air outlets of the diffusion and air mixing type. These outlets are to consist of hollow flaring members placed within each other in such relationship that the discharged air is hemispherically diffused. This diffusion shall be effected without noticeable air motion at any point at or below the breathing level. The hollow members while diffusing the air shall simultaneously draw in from the enclosed area a volume of air not less than 35% of the specified discharge volume thus mixing room air with the primary air before the total volume is discharged and effecting substantial equalization of the room temperature and prevention of air pockets. The combined air diffuser and air mixer shall not add any noticeable noise to the sound level of the room when using specified velocities in the neck of the device.

All diffusers installed under this contract shall be Anemostat Draftless Aspirating Air Diffusers as manufactured by Anemostat Corporation of America or equal. But There is NO

"OR EQUAL"
for

ANEMOSTAT

DRAFTLESS
Aspirating
AIR DIFFUSERS

THE PAY-OFF POINT in a heating, ventilating or air conditioning system is when air reaches the duct openings. If air is improperly distributed, the whole installation will be a waste of money and equipment. So don't take chances on half-way measures... don't specify "or equal" because there is none for patented Anemostat Draftless Air Diffusers.

Here's why. Only Anemostats are distinguished by the exclusive feature of aspiration. That's why Anemostats do all these jobs: distribute air in predetermined patterns, instantly equalize temperature and humidity, eliminate stale air pockets, permit a high number of air changes per hour with complete freedom from drafts.

The proof is obvious in every way . . . smoke test pictures, laboratory instrument readings and the actual performance of more than 1,000,000 Anemostats bringing new standards of draftless comfort to scores of industries.

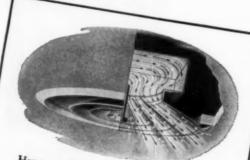
ANEMOSTAT®

DRAFTLESS Aspirating AIR DIFFUSERS

ANEMOSTAT CORPORATION OF AMERICA 10 EAST 39th STREET, NEW YORK 16, N. Y. REPRESENTATIVES IN PRINCIPAL CITIES

"NO AIR CONDITIONING SYSTEM IS BETTER THAN ITS AIR DISTRIBUTION"

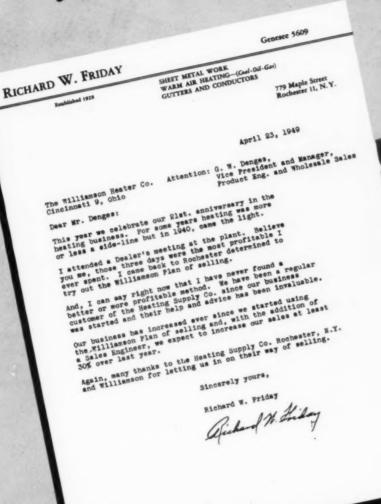
Whatever your air distribution problems in new or existing systems, Anemostat field engineers will draw on this wide experience to help you find practical, economical solutions. Remember — there is no "or equal" for Anemostat Draftless Air Diffusers.



Here, graphically presented, is the aspiration principle that makes the Anemostat Air Diffuser superior. Due to its patented design, the Anemostat distributes of planes traveling in a multiplicity of counter-currents which siphon room-air the device equal to about 35% of supply-air. Room-air is mixed with air-mixture is discharged into the room.

AC-1197

The Most Profitable 3 days 9 ever spent"



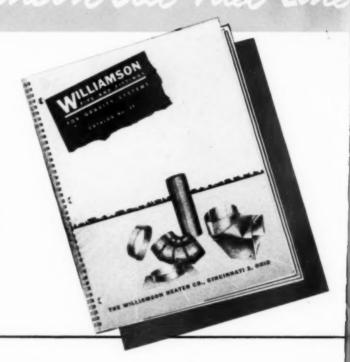


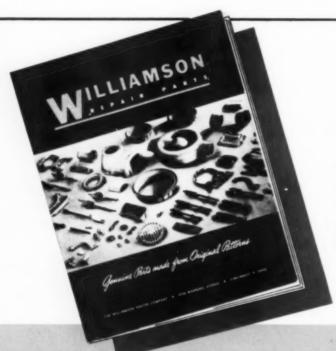
If you are looking for products you will take pride in selling and a "way of selling" that will, if properly pursued, help you build a permanent and profitable business—then take a tip from Richard W. Friday and have a talk with the Williamson representative in your territory.

WILLIAMSON ALL-FUEL FURNACES

Williamson Pipe and Fittings

High quality of design and workmanship-plus quality materials and careful inspection save pay-roll dollars and give you installations your customers are proud of. And the line is complete for Gravity and Forced Air. The coupon will bring the Catalog and the name of our Distributor nearest to you.





Williamson Repair Parts Castings

There's profit, as you know in Repair Service and no other service leads to more profitable replacement sales. When you replace a Williamson part, do it the easy, profitable way -sell only genuine Williamson parts, made in regular daily foundry production and inspected for sale as parts of New furnaces. If you don't have the catalog—just mail the coupon.

To - THE WILL	LIAMSON HEAT	ER COMPANY
4558 MARBURG A	VE., CINCINNATI	
Send us — ☐ Furnace Catalog	☐ Fittings Catalog	Repair Catalog
☐ The name of your	nearest Distributor.	
Name		
Address		
Adoress		

Get the facts 4558 MARBURG AVE., CINCINNATI 9, OH



Advertising Copy Policy...

AMERICAN ARTISAN is a member of ABP and subscribes to its Standards of Practice:

"To refuse to run any advertising copy in which any statement or representation is made which disparages or attacks the goods, prices, services or advertising of any competitor or of any other industry, or which contains statements or claims about an advertiser's own products or services which the publisher knows or has reason to believe are untrue or inaccurate."

A Statement of Advertising Principles

- GOOD ADVERTISING---aims to inform the consumer and help him to buy more intelligently.
- GOOD ADVERTISING---tells the truth, avoiding misstatement of facts as well as possible deception through implication or omission. It makes no claims which cannot be met in full and without further qualification. It uses only testimonials of competent witnesses.
- 3. GOOD ADVERTISING---conforms to the generally accepted standards of good taste. It seeks public acceptance on the basis of the merits of the product or service advertised rather than by the disparagement of competing goods. It tries to avoid practices that are offensive or annoying.
- 4. GOOD ADVERTISING---recognizes both its economic responsibility to help reduce distribution costs and its social responsibility in serving the public interest.

-Advertising Federation of America-

American Artisan



chaelet BRUSHES

FOR PLUMBERS...FURNACE MEN...HEATING CONTRACTORS

Performance tested, SCHAEFER Brushes offer longer wear, better service, greater value—with the correct brush for every industrial and domestic use.

SCHAEFER Flue and Boiler Brushes of SILVER BRITE Rustproof Wire

SCHAEFER'S special alloy "Silver rustproof spring steel wire has Brite" been developed for longer wear, more effective cleaning. It offers extra value, extra satisfaction in any brush.



SCHAFFER Rectangular Flue Brushes No. 8-415-2"x4"x436" No. 8-416-3"x5"x41/4"



SCHAFFED Boiler Brushes S-393--1¾"x4"x5½" S-394--2½"x6"x6½" S-395--3½"x6"x6½"



SCHAFFER Boiler Brushes



SCHAEFER Boiler Brushes No. 8-399-2"x4"x6" No. 8-400-2½"x4½"x6" No. 8-401-3"x5"x6"



Single and Double Spiral Flue Brushes

No. 8-432—Single Spiral

No. 8-433—Pouble Spiral

No. 8-433—Pouble Spiral

1" to 4" dia.

No. 8-434—For s m a 1 1

Flues, ½" to

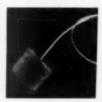
1" dia.



SCHAEFER Round Flue Brushes of Single Spiral, Flat Steel Wire No. S-430-1" to 4" dla.

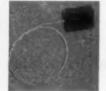
SCHAEFER Rectangular Flue Brushes of Flat Steel Wire-Spiral

No. 8-420-2"x3¼"x4" No. 8-425-2%"x6%"x7"



Brushes of Silver Brite Rustproof Steel

No. S-442—3", 4", 4½", 5" with 5 ft.



SCHAFFER Fibre Furnace Brushes

Selected Bassine fibre, flexible wire stem, 4", 5", 6" dla., 48" and 60" handle.

No. S-444-445



SCHAEFER Chimney Cleaning Brushes No. 66-6". 7", 2", 10" and 12" dla. round style of Black Tempered Brush Wire. No. 666-6", 7", 8", 10" and 12" dla. oblong style of Flat Tempered Steel Wire.



SCHAEFER
Wire Wheel Brushes
Solid Center Type of
crimped steel wire.
No. 276-6" dis. x 1%" face. No. 278—8" dla. x 1%" No. 280-10" dia. x 2"



SCHAFFER Handy Wire Brush

No. 816 — For roughing, soldering etc., 6" long, tempered steel wire trimmed 11/2".



Tin Handle Acid or Dope Brushes

Selected grade bristles in tin ferrule. Width, %", 1/2", %".



T. W. Flat Acid Brushes

Tinners soldering brush, horsehair filling, 1%" width, 7%" overall, Twisted wire handle.



Radiator or Condenser Tube Brushes

Twisted in wire handle, selected hair or bristle. Wide range of sizes, No. 10—% "dia. x2" brush x 6½" overall. No. 11—½" "dia. x3" brush x 8½" overall. x 8½" overall.



SCHAEFER Curved Handle Wire Brushes

No. 810 — Oil tempered steel wire, trimmed 1¾". hardwood block, 14" long. Brush 6", 2, 3 or 4 rows.



SCHAFFER Shoe Handle Wire Brushes

No. 812 — Oil tempered rustproof wire, 5" brush, 2, 3, 4 rows. Trim 1¼", overall 10".



SCHAEFER Straight Back Wire Brushes

No. 800-11—Oil tempered steel wire. Hardwood block, 7½" x 2¼". Wire trim. 1¾". 6 x 19 rows.



SCHAEFER Vacuum Cleaner Brushes

No. 1005—Bassine Fibre Brush, 10½" dla. tapered to 3" dla. x 6 ft. long—48" handle with threaded nipple at end.

No. 1000—Bassine Fibre Brush, 10½" dia. brush x 10" long. Handle 39" with threaded nip-ple at end.



Wire Flue Brush and Extension Handles

4 ft. Handles with Nipple and Coupling.

5 ft. Handles with Nipple and Coupling.

6 ft. Handles with Nipple and Coupling.

Write for SCHAEFER Catalog of flue and furnace brushes, or for information on any special brushes for specific requirements.

SCHAEFER BRUSH MFG. CO.

117 W. Walker Street

Milwaukee 4, Wisconsin

TI

A

Combustioneer PAYS YOU BIGGER PROFITS WITH ITS COMPLETE LINE

You can solve almost every coal heating problem, and make a bigger profit for yourself, with Combustioneer's complete line. For any installation . . . from the small home to the large industrial plant . . . there's a Combustioneer model that's sized right, designed and built, for that particular service. Hopper-feed or binfeed, burning 15 to 1000 lbs. per hour . . . you'll be able to equip homes,

factories, stores, theaters, hotels, apartments, public or other buildings with a Combustioneer Automatic Coal Stoker.

We'll Help You Sell

Combustioneer's merchandising plan includes catalogues, folders, post cards, sales letters and many other sales helps for all kinds of prospects. Newspaper advertising is supplied on a 50-50 cooperative plan. Our field men assist you with sales and heating

problems. Our factory schools train your salesmen and service men.

Write Today...for Profits

We offer you an exclusive Combustioneer franchise. All Combustioneer profits in your territory... and they'll be big profits . . . will come to YOU. Write us now, today, for full details of the Combustioneer Franchise and Sales Plan that will help you close heating prospects, help you make more money!

ONLY COMBUSTIONEER HAS the Automatic Respirator which supplies the correct amount of air, and the "Pulsating" Transmission which agitates the fire bed constantly both during the feeding and off cycle. These exclusive Combustioneer features mean more satisfaction for users, more profit for you.



Combustioneer

AUTOMATIC COAL STOKER

THE STEEL PRODUCTS ENGINEERING CO., SPRINGFIELD, OHIO



The Steel Products Engineering Co. 1227 W. Columbia Street Springfield, Ohio

Please send me, without obligation, full details of your Combustioneer Franchise.

NAME

ADDRESS

CITY___

ZONE___ STATE

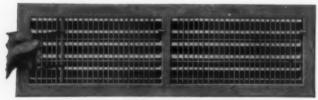
DIRECTED AIR FLOW at any angle with



321-A HMV

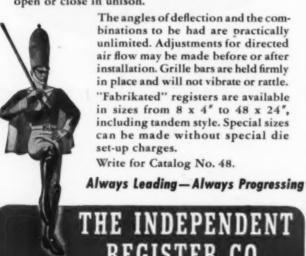
Rear View Showing "HMV" Valve

Every grille bar adjustable individually—before or after installation



321-A HMV Tandem

Any direction of air flow—right, left, up, down and any combination—is easily obtained with "Fabrikated" Style No. 321-A HMV air conditioning registers, for residence or commercial installations, on sidewalls or ceiling. The face bars are adjustable to right or left; valves on the back are adjustable to direct the air flow up or down; valves may also be fully closed, and are connected to open or close in unison.



3747 E. 93rd STREET - CLEVELAND, OHIO

NEW LITERATURE

Use Coupon on Page 107

Information on simplified heating for large open buildings is offered in a folder describing a direct-fired air-rotation system. Capacities of the units used in the system range from 70,000 to 5,000,000 Btu. They are designed with multiple banks of criss-cross air heating tubes placed directly over the fire for maximum heat transfer from fire to heated air delivered into the building. With the air rotation system, large volumes of air are circulated without piping or ducts. The method is said to reduce installation, fuel, and maintenance costs.

The folder is illustrated with numerous photographs of buildings in which this heating system has been installed.

Johnson Heater Corp., Saugus, Mass.

Colorful portfolio containing 11 envelope pockets filled with samples of sales aids is available to dealers through American-Standard distributors.

Included are five new dealer helps: Room Idea Book, containing decoration plans for bathrooms, kitchens, and basements; large Telechron electric clock, with American-Standard Mark of Credit, for dealers' stores; book matches, to be imprinted with dealers' name; and price cards.

Other pockets contain direct mail literature, a complete mat service, ideas for point of sale display, and data on various types of dealer identification.

American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.

Practical Aspects of Inert-Gas Welding is the title of a reprint of a paper by H. A. Huff, Jr., and A. N. Kugler, which was originally presented before the American Welding Society's 29th annual meeting.

The 16-page reprint offers a resume of inert gas, shielded arc welding, including a description of the process, gases used, and techniques in welding stainless steel, aluminum, copper magnesium, steel and other metals. Text is augmented by 14 photographs and 3 tables.

Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.

Technical Bulletin T-3, entitled Resistance of Monel, Nickel and High-Nickel Alloys to Corrosion by Sulphuric Acid, discusses performance of over 30 different nickel-bearing materials in a wide range of services. It contains 86 tables and 33 graphs and photographs in addition to the text matter.

The International Nickel Co., Inc., 67 Wall St., New York 5, N. Y.



MAKES only QUALITY OIL BURNERS!





Westinghouse flanged Motors with overload protection



Sundstrand Oil pumps





Minneapolis Controls





One piece machined Castings—with built-in quietness and efficiency



Radio shielded transformers — Jefferson or Super

Engineered and designed to use 100% catalytic oil. Nothing "cheap" goes into a Quiet Automatic Oil Burner—that's why they are so efficient and quiet. We build them that way. The same precision craftsman who make machinery for the world's leading steel and copper mills, make QUIET AUTOMATIC Oil Burners. Hundreds of dealers have switched to Quiet Automatic — How about finding out more about it today.

QUIET AUTOMATIC BURNER CORP.

J. Gordon Kaveny, Pres.

33-35 BLOOMFIELD AVE., NEWARK 4, N. J.

NEW LITERATURE

Use Coupon on Page 107

The Mor-Sun Plan, a comprehensive method of customer financing through local banks, is outlined in detail in a 20 page brochure available to Morrison merchandisers, their banks, and other interested parties. The inside back cover of the brochure includes a pocket which contains the Wholesale Repurchase Agreement, a sample of the Trust Receipt, the latest bulletin on the truck body being produced by the manufacturer, furnace literature, and a booklet entitled "The Story of Morrison."

Morrison Steel Products, Inc., Buffalo 7, N. Y.

Solenoid valves, particularly designed for oil burner applications, are described and illustrated in Bulletin No. 492. Features of the new line of valves are stainless steel construction, soft synthetic inserts which prevent leakage, and coils impregnated to withstand moisture. Valves, for continuous or intermittent duty, are available for applications such as drip eliminator, cut-off, pressure relief, gas ignition, shut-off, shut-off metering, and shut-off with manually adjustable by-pass.

Construction diagrams, electrical data, ordering in-

structions, and prices are included in the bulletin.

Skinner Electric Valve Div., The Skinner Chuck Co., Norwalk. Conn.

Vaporizing Burner Catalog................273

Ball Flame vaporizing burners for residential furnace installations as well as for commercial use on ranges and ovens are described in literature offered by a burner manufacturer. Included are photographs illustrating the units, installation instructions, and specification data.

Kresno-Stamm Mfg. Co., (America) Inc., Palisades Park, N. J.

Glycol Vaporizer Data......274

Engineering data, installation instructions, and specifications for Model ARA-4 Glycol vaporizer unit are included in Bulletin No. 402-2, offered by the manufacturer. Vaporization in this unit is accomplished by means of heat and glass wick action. The germicidal agent introduced into the air conditioning system is triethylene glycol, which has proved effective against airborne bacteria.

In addition to general description and application details, the bulletin contains an external wiring diagram for the vaporizer, and diagrams of five different installation arrangements that may be used.

The unit measures only 15 x 15 x 17 in., yet has sufficient capacity to treat a fan system handling up to 20,000 cfm of fresh air.

Air Purification Service, Inc., Newark 2, N. J.

"Now I'm not just selling heat alone alone but REAL INDOOR COMFORT!"



The Brundage AIR-RENEWER, scientifically cleans the air, maintains proper humidity, removes germs and bacteria and provides ideal air circulation. It is the answer to the ever growing de-

mand among home owners everywhere for clean, correctly humidified indoor warm air without its usual irritating dryness... air free of harmful bacteria. Compact, quiet, completely automatic, trouble-free, the Brundage AIR-RENEWER opens an entire new field of sales to you. Write for literature today!



Blower Specialists Since 1919

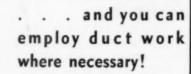
61. NORTH PARK STREET RALAMAZOO II, MICHIGAN



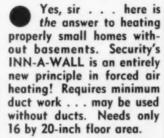
Typical installation of the Brundage AIR-RENEWER in conjunction with a forced warm-air type heating system.

NOW . . .

a TRULY Forced Air







The INN-A-WALL reverses the usual flow pattern . . . warm air comes out the bottom. This means warm floors! Warm air can be taken from all four sides ... return air, from all sides at the top. Where ducts are required for distant rooms, permanent connection is made at the bottom. Completely assembled . . . ready to install. Casing height, 88 inches. Security breather tube automatically supplies air for combustion.

Other outstanding INN-A-WALL values are • Quiet, positive blower • Fully automatic • Special Security high-efficiency burners • Complete adaptability to any floor plan (may be placed in wall or stand alone) • Amazingly economical in price.

SECURITY

Automatic, Gas-Fired

INN-A-WALL FURNACE

Write Today . . .
don't delay. Get all the facts
about this revolutionary new furnace.

SECURITY MANUFACTURING CO.

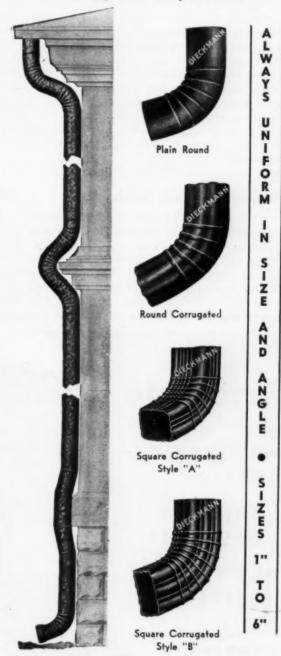
1630 Oakland St.

Kansas City 3, Mo.

F. Dieckmann

Conductor Elbows - Conductor Shoes

Made in angles from 10 to 90 degrees
"An Angle For Every Obstacle"



Made in 28, 26 and 24 gauge steel hot dipped galvanized after formation. Also Copper, Aluminum and Stainless Steel.

Catalog Available - Ask Your Jobber

THE FERDINAND DIECKMANN CO.

Established 1871

Cincinnati 22, Ohio

NEW LITERATURE

Use Coupon on Page 107

Dealer brochure and catalog sheets offer information on a Contour Cutter which employs a standard acetylene machine cutting blowpipe to automatically reproduce a desired pattern in any sheet steel or heavy plate steel with uniform accuracy. The pattern tracing finger incorporates a variable speed, magnetic rotor which exactly follows the master pattern in producing flat shape duplicates in any quantity desired. Flexible range of practical pattern sizes includes 34 in. holes to 5 ft diameter shapes.

Catalog sheets include illustrations, keyed diagrams of the cutter, as well as dimensions, weight, and price information.

Heath Engineering Co., Fort Collins, Colo.

A new display panel for the Field Fuel Saving System is electrically wired to show actual operation of the system under simulated firing conditions. This display is available to Field jobbers and dealers.

The unit measures 20 x 20 in., and is constructed of 16 ga steel, maroon finished; it weighs 25 lbs complete with controls. Rubber feet hold the display from slipping, and protect any surface on which it is placed.

Controls shown in action on the panel are the Barochek, thermostat, stoke-switch, ash pit damper, damper motor. The limit switch appears on the panel but is not shown in action.

This visual demonstration of the operation of the Fuel Saving System is intended as a sales aid for jobbers and dealers.

Field Control Div., Mendota, Ill.

An illustrated bulletin is available on a line of horizontal stroke, high speed friction saws. Improvements incorporated in new models include: effective spark control, proper blade cooling, filtration of motor ventilating air, and revised method of guiding carriage, allowing permanent alignment of the blade.

The construction and operating principles of the saws are described in detail and cutting data is furnished in handy table form on the back page of the folder.

Kling Bros. Engineering Works, 1320 N. Kostner Ave., Chicago 51, Ill.

Pull-tab demonstrator which shows the way Rivnuts are installed is available upon request. The Rivnuts are one piece blind rivets with inside threads.

The demonstrator explains how the rivets work and lists typical applications in which they have proved valuable.

The B. F. Goodrich Co., Akron, Ohio.

Triangle SHOCK Pillow Block

- PROVENDESIGN
- BUILT-IN
 CUSHIONS
- •NEW LOW PRICES

Send for Details Today



SPECIAL MOUNTINGS DESIGNED TO MEET SPECIFIC NEED!

TRIANGLE MANUFACTURING CO.

392 DIVISION STREET

OSBROSH, WILCONSIN

GAS and OIL BURNING =

NATIONAL HEATER COAL FIRED





WIDE RANGE OF

APPLICATIONS

Specifically constructed and designed for stoker and hand firing with blower position at rear or side of casing, this unit embodies all the features of other NATIONAL heaters for greater satisfaction and economy of operation. Can be quickly and efficiently converted to light oil, heavy oil or gas firing as future fuel costs and supplies may necessitate.

Write for Literature

HEAVY DUTY FORCED AIR UNITS FOR LARGE SPACE HEATING REQUIREMENTS

A self-contained unit with adjustable discharge heads for positive heat delivery in any direction. Streamlined fire box of high heat and corrosion resisting Type 310 Stainless Steel insures a far longer life of service and satisfaction. Tear Drop combustion chamber design and convector tube arrangement affords complete efficient air wipage of all heating surface at minimum resistance. Available in models for central heating systems employing supply and return ducts.

GENERAL CAPACITY DATA-

OIL & GAS FIRED HEATER

Model Number	Btu	Cfm	hp	Dimensions (inches) length-width-height			Shipping Weight
T. D.— 25	250,000	3,600	3/4	60	32	81	1,300 Lbs
T. D 40	400,000	5,400	1	60	32	81	1,350 Lbs
T. D 50	500,000	6,600	11/2	80	32	81	1,780 Lbs.
T. D.— 70	750,000	8.800	2	80	32	81	1.855 Lbs.
T. D.— 80	800,000	10,200	3	80	48	81	2,110 Lbs
T. D100	1.000,000	12,500	5	80	48	81	2,200 Lbs
T. D.—125	1.250.000	15.300	5	100	54	103	3.000 Lbs.
T. D.—150	1,500,000	19,400	71/2	100	54	103	3,250 Lbs

These units have proven practical and economical for most types of public, commercial and industrial buildings. National Champion heaters are the product of over a half century of experience in this field and the latest advanced engineering features of these units have been tested in a rapidly increasing range of actual installations. NATIONAL HEATER CO.

CLEORA & VANDALIA STS.

ST. PAUL, MINN.

You Benefit from

AEROFIN'S Unequaled Experience in Design and Manufacture of FIN-TYPE Heat Exchangers

For over 26 years, Aerofin - pioneer manufacturer of fin-type heat-transfer surface - has been accumulating an unequalled experience in the design and fabrication of heat exchangers. For the right design, materials and construction - for accuracy and efficiency - put your heattransfer problems up to Aerofin.

AEROFIN is sold only by manufacturers of nationally advertised fan system apparatus. List on request.

EROFIN CORPORATION

410 South Geddes St., SYRACUSE 1, N.Y.



NEW YORK . CHICAGO . CLEVELAND . DETROIT . PHILADELPHIA . DALLAS . SAN FRANCISCO . MONTREAL

JOHN ZINK



"SHORT" FLOOR FURNACE

— Two Sizes Available -

50.000 Btu

AGA Approved for Natural, Manufactured and Liquefied Petroleum Gases

These new floor furnaces are especially designed for installation where underfloor space is limited. Being only 26" deep, they can be installed where foundations are extremely low, eliminating the necessity of making a pit.

CONVERSION BURNERS



LUMINOUS FLAME MODEL

Easy to install. Operates manually or automatically. Burns clean fuel—natural, mixed, mand factured or LP gases—without soot or smoke. Luminous flame radiates heat two to three times faster than a blue flame. Four sizes available for either vertical or horizontal firing.

BLUE FLAME MODEL

Designed to meet the requirements of this type of burner. Capacity range of 100,000 to 200,000 Btu/hr. for operation on natural, mixed or manufactured gases. Manual or automatic operation. Easy to install

Write for Literature

John Zink Company

4401 SOUTH PEORIA

TULSA, OKLAHOMA

New York - Salt Lake City - Houston - Los Angeles

NEW LITERATURE

Use Coupon on Page 107

Informative 36-page catalog covers a complete line of steam coils offered by manufacturers of heating and cooling coils and heat transfer equipment.

It is designed for quick reference, containing illustrations of Marlo standard steam coils and standard non-freeze steam coils, with factual, simplified descriptions, including dimensional data, capacity ratings, and coil selection charts. Supplemental information on steam properties, condensation rate factors, air friction, and steam coil weights furnish a working and estimating guide for heat transfer installations.

Marlo Coil Co., 6135 Manchester Ave., St. Louis 10,

th

ta

di

an

10

ab

tio

ad

ius

ch

ani

lor

the

How

Welding Supplies280

Bulletin 467, Directory of Welding Supplies, illustrates and describes the construction and use of a complete line of welding accessories, including electrode holders, ground clamps, connectors, protective head shields, cable, and various types of electrodes offered by the manufacturer.

As an added feature, a list of handbooks and instructive movie films on arc welding is included on the back cover of the bulletin.

The Lincoln Electric Co., Cleveland 1, Ohio.

Break-Even Chart for Management 281

The Economics of Industrial Management is a well-written and thoroughly documented volume on a basic concept: how a business man can stay in business and how he can make a profit. Dr. Rautenstrauch, one of the co-authors is the originator of the Break-Even chart and the book contains the latest research on the use of this business tool.

Beginning with the planning of a business the book takes up the problems that can be expected to arise in such an enterprise and demonstrates how they can be solved. Written in language that the layman can understand, the actual profit and loss charts of many businesses are published to illustrate the results of efficient planning and management.

Industrial costs are analyzed in the next section of the book and the starting point is a discussion of the basic calculations in the use of money. After showing what money can and should do in the field of investment, virtually every cost involved in the production and marketing of a product is explained.

Business is considered in its role in the life of our nation in the concluding chapters. The economic factors which affect production are defined and the influence of population and effective purchasing power is particularly brought out. The ever-rising pattern of industrial expansion closes the discussion.

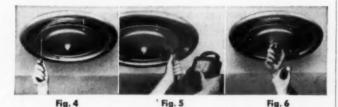
The Economics of Industrial Management, by Walter Rautenstrauch and Raymond Villers, 451 pp. Funk and Wagnalls Co., New York.

for fast installation and a quick OK on the job specify Kno-Draft,

the completely adjustable air diffusers



Features like the self-contained inner unit (Fig. 1) and the HD set-lock assembly (Figs. 2 & 3) speed your work along. They are especially handy where ceilings already exist. It's a simple job to remove the inner assembly, attach the outer cone to collar or duct and reassemble the diffuser. The outer cone slips over the suspension bolts and is secured by a slotted washer which keeps the spring loaded catch in compression.



These Kno-Draft features not only speed installation but they eliminate the tough job of figuring everything about the air movement in advance. If people or partitions are relocated while the job is in progress, you can adjust to meet the changes in a jiffy. A screwdriver adjusts the three suspension bolts for any angle of air discharge from horizontal to vertical. (Fig. 4). The single annular air stream permits immediate and accurate velometer reading (Fig. 5). A twist of the wrist regulates the air volume (Fig. 6).

FREE LITERATURE

How to Bulance Air Delivery of a System of Manifold Air Diffusers. Reprint of a paper presented at 55th ASHVE Meeting describes method of determining in advance the damper setting for each outlet so as to apportion total air delivery among the outlets in the ratio intended or required. Application is demonstrated by examples.



Handbook on air diffusion. It contains up-to-date engineering data, charts, photographs, sketches and dimension prints that simplify the selection and application of Kno-Draft Diffusers. It shows how you can get top efficiency from an air conditioning system, cut installation time and get off the job faster. Please write Department J-20.

W. B. CONNOR ENGINEERING CORP.

Air Diffusion . Air Purification . Air Recovery



IN CANADA: Douglas Engineering Co., Ltd., 190 Murray Street, Montreal 3, P. Q.



IN Peerless Electric

• Peerless Electric blowers and package units are manufactured complete in the Peerless plant. Peerless is not an assembled line.

Peerless equipment is dependable-you minimize service worries because Peerless equipment is designed and engineered from 56 years experience in producing quality electrical apparatus. And you'll find that Peerless blowers and package units are priced right to earn a profit for you. Write for detailed information.

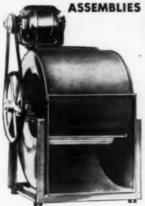
PEERLESS ELECTRIC AIRBOY BLOWER ASSEMBLY

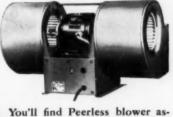


A direct drive blower that delivers 850 cubic feet of air per minute. 3-speed blower with

motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced. The two motor bearings are the only bearings in the unit. Also supplied with cabinet and air filters as a complete package unit.

BELT AND DIRECT DRIVE BLOWER





semblies in many nationally-sold air conditioning furnaces of the finest quality. We furnish both of these assemblies ready to install in your own furnaces or cabinets. The many fine construction qualities of these blowers add valuable sales features to your heating units.

THE PEERLESS ELECTRIC COMPANY ESTABLISHED 1893 . WARREN, OHIO

WITH THE CONTRACTORS

AN OUTSTANDING EXAMPLE of the effective way in which a contractor can display his line of heating equipment was provided by the A. H. Gerdsen Company in their booth at the recent Cincinnati Home Show. Using an exhibit space only 20 ft wide and 10 ft deep, the company arranged an almost complete display of equipment and still maintained adequate space for conferences with visitors.



During the eight day show, approximately 10,000 prospect contacts were made in the booth, and 15 to 20 subsequent sales, directly traceable to these contacts, testify that this contractor really did an effective job of sales promotion.

THE DILL & Norris Sheet Metal & Heating Company of Columbus, Miss., is justifiably proud of a winter air conditioning system recently installed in one of the oldest houses in Columbus.

There were many construction factors to be taken into consideration in designing an efficient heating plant for the house. Some of these, which presented heat transmission loss problems and tested the engineering knowledge of the contractor, were the 14 in. solid oak walls, and the window sash which had been made and fitted by hand.

The plant which has successfully solved all problems consists of two 120,000 Btu gas fired winter air conditioners tied together as a twin unit. The control system employs a clock thermostat which operates the single motorized gas valve supplying both units. Each unit has a separate limit control and pilotstat, any of which will close the motorized valve. Both blowers are operated by a single blower control governed by temperature in the plenum served by both units.

This system was designed according to NWAH&ACA Manual No. 9, and has proved so satisfactory that the home owner is high in his praise of warm air heating.

FRANK E. WINSTEL, who has been engaged in the automatic heating business in Cincinnati for the last 20 years, has incorporated a new company, named Auto-Heat, Inc., for the distribution of several lines of automatic heating equipment. He is president of the Cincinnati Chapter, Oil-Heat Institute, and is vice president of the Greater Cincinnati Stoker Association.

PILLOW BLOCK

Low cost model for shafts 5%", 34",

18" and 1". Mounts to any position



Shafts roll quietly and efficiently, for the life of the equipment, when you standardize on self-aligning, self-lubricating Randall Pillow Blocks. There's a Randall that's right for every air handling need . . . and you can afford the right Randall.

Write for Catalog 49, with complete data on Randall's exclusive design features, new models and new specifications.

Randall Graphite Bearings, Inc.

609 West Lake Street, Dept. 711, Chicago 6, Illinois



There's a NEW MORRISON

Carry Purse and Purpose!

The NEW MORRISON "CARRY-ALL" All-Steel, All-Purpose Service Body Cuts Your FURNACE DELIVERY SERVICE and SHEET METAL Call Costs

MORRISON STEEL PRODUCTS, Inc., designers, engineers and manufacturers of precision steel products for the automotive industry for over 35 years, present the new line of service and utility light truck bodies — the new all-steel, all-purpose Morrison SERVICE and UTILITY Body . . . the "CARRY-ALL"!

Completely precision made — from draftsman's board to assembly line — the Morrison "CARRY-ALL" is the product of the latest engineering techniques of the modern metal stamping art. Mass produced from extensive and complete tooling, and assembled in elaborate fixtures, the Morrison "CARRY-ALL" combines the light weight and strength of high tensile steel — function and appearance at the right price!

The Morrison "CARRY-ALL" all-steel underbody bridgetype construction means more strength — more pay load — more space — more service!

From its roomy weathertight key-locked and handled compartments to its offset-reinforced non-skid heavy-load floors . . . with its many attractive and functional features and accessories . . . you get more in the Morrison "CARRY-ALL" . . . because MORRISON STEEL PRODUCTS have put more into it!

Write for Bulletin B49-1-A - A Guide to the Selection of Service Bodies. Its Yours FREE for the asking.

Optional equipment includes:

- Tailored Canvas Caravan Top, Sliding Metal Roof
- Overhead Ladder Rack with Spring Hold Downs
- Sectional Material Trays with Adjustable Partitions
- Compartment Shelves, Pipe Vise Brackets and Pipe Racks

MORRISON "CARRY-ALLS" are sold through any franchised chassis dealer by established truck equipment distributors.

MORRISON STEEL PRODUCTS, INC.



CARRIE

"Carry-All" Service Body Division 625 AMHERST STREET, BUFFALO 7, N. Y.

Follow up this

BIG LINE &

to greater heating profits



- A Heating Line you will be proud to sell.
- A complete Heating Line of types and sizes.
- A Line of Commercial and Domestic Stokers.
- A moderately-priced Heating Line.
- A fine quality Heating Line.
- A big name Heating Line made famous by years of national advertising.
- A Heating Line that will enable you to successfully compete on price, quality, reputation and provide a wide variety of home and commercial installations.

CLIP AND MAIL THIS COUPON
WHILE GOOD TERRITORY
IS STILL AVAILABLE



STOKOL-STOKER CO., INC. DAYTON 1, OHIO

Please send me complete information on the BIG STOKOL LINE.

Name_

Address.

City.....

__Zone___State_

Raymond J. Schneiberg

After a long, lingering illness, Raymond J. Schneiberg, assistant vice president of Air Filter Corporation, Milwaukee, Wisconsin, passed away at St. Joseph Hospital on Sunday, May 22.

Mr. Schneiberg was well known in the heating, ventilating, air conditioning and welding industries, particularly in Wisconsin where he was engaged in sales and distribution of such products for many years.

John D. Goodwin, Jr.

John N. Goodwin Jr., owner of the John Goodwin Sheet Metal Works, 1706 W. Clybourn, Milwaukee, Wisconsin died June 19 in a fire that destroyed his hunting shack near Amberg, Wisconsin. An official investigation was started to determine the cause of the mystery fire which was discovered at 5 a.m. by two fishermen. Before help arrived the flames were out of control. Mr. Goodwin had been using the hunting shack while building a summer home nearby, a project he had been working on since April.

George Stochr

George Stoehr, former president of Stoehr and Laudon, Inc., 1705 W. Clybourn, Milwaukee, Wisconsin, died June 25, after a two year illness. Mr. Stoehr had

been a sheet metal contractor for 40 years and was a former president of the Sheet Metal Contractors' Association of Wisconsin.

News Summary of the Month

(From page 72)

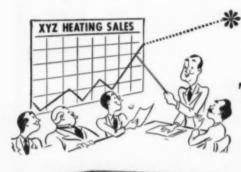
kind of equipment connected with the air conditioning

The exposition will occupy two modern buildings at State Fair Park; the Hall of Agriculture and the Poultry Building—both of which offer excellent facilities for display and demonstration of every piece of equipment in purifying, heating, cooling, and moving air, for both industrial and residential application.

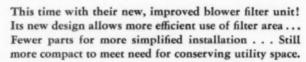
Dallas, the site chosen for the exposition, has for some time been the scene of great construction activity, and more is planned for the years to come. Construction now in process includes industrial projects in wide variety, as well as hotels, office buildings, and residential units to meet the great demand for housing.

According to the exposition management, leading manufacturers of heating, ventilating, and air conditioning equipment from all parts of the country will display their products. It is expected that many new developments in these fields will be shown for the first time in these displays.

The exposition is being managed by the International Exposition Company, with permanent headquarters at Grand Central Palace, New York City. This company







The same craftsmanship and engineering skill which has made the name Brundage synonymous with quality for 30 years is maintained in this latest product designed to meet increasing demands by homeowners for greater indoor living comfort.

For service, for quiet operation, for complete customer satisfaction, Brundage sturdy, all-steel cabinet unit is the best you can buy. Write for information.

Furnace Blower Twin Assemblies . . . Exhausters . . . Air-Renewers





Blower Specialists
Since 1919
611 NORTH PARK STREET
RALLMAZOO 11, NICHICAN

BOIII THE BEST service the rest

Compare ANCHOR Heating Equipment with any other at comparable prices . . . and you'll see that ANCHOR products are made for service . . . not for SERVICING!

With ANCHOR, you make fewer of those free service calls that eat up fair profits so that your service crew can more profitably spend its time.

Over 80 years of experience in the heating equipment field goes into the design, development and construction of each of nearly 100 models of ANCHOR heating equipment! ANCHOR products are Nationally Known . . . and, Nationally in Demand.

Choice franchises are available. Write for complete details.

Anchor Division,
Stratton & Terstegge Co., Inc.
P.O. Box 311, New Albany, Indiana





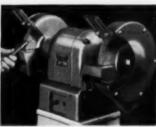
B&D Electric Porto-Shear cutting 16-gage stainless steel. Cutting action always visible to operator.



Versatile B&D Sander smooths cabinet corner. Same tool grinds, wire brushes, planes wood.



B&D 1/2" Standard Drill drilling holes in 10-gage frame. Other B&D Drills from 1/4" to 11/4" capacities.



Fingles uses a B&D Bench Grinder for grinding down welds, beveling stainless steel edges, sharpening tools.

The way to solve more tooling problems...

the world's most diversified line of Portable Electric Tools!

By standardizing on Black & Decker Tools, The Fingles Company of Baltimore, Md. has saved time and money on scores of jobs like these. As a custom sheet metal shop, Fingles needs versatile tools to handle a wide range of jobs in the shop and on outside installations. Black & Decker "universal" tools give them this versatility—plus expert repair service from a convenient B&D Factory Service Branch to keep their tools in top production form. And every B&D Tool is quality-built, engineered and powered to turn out better work, with less effort, at lower cost! See your nearby B&D Distributor for free demonstrations. Write for detailed catalog to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Md.



OTHER BLACK A DECKER TOOLS used by The Fingles Co. include Electric Hammers for cutting mortar out of joints to install flashings and for drilling holes in concrete and brick; Electric Tappers for assembly work; Portable Grinders for grinding down welds where the tool must be brought to the work.

Raymond J. Schneiberg

After a long, lingering illness, Raymond J. Schneiberg, assistant vice president of Air Filter Corporation, Milwaukee, Wisconsin, passed away at St. Joseph Hospital on Sunday, May 22.

Mr. Schneiberg was well known in the heating, ventilating, air conditioning and welding industries, particularly in Wisconsin where he was engaged in sales and distribution of such products for many years.

John D. Goodwin, Jr.

John N. Goodwin Jr., owner of the John Goodwin Sheet Metal Works, 1706 W. Clybourn, Milwaukee, Wisconsin died June 19 in a fire that destroyed his hunting shack near Amberg, Wisconsin. An official investigation was started to determine the cause of the mystery fire which was discovered at 5 a.m. by two fishermen. Before help arrived the flames were out of control. Mr. Goodwin had been using the hunting shack while building a summer home nearby, a project he had been working on since April.

George Stochr 1886 — 1949

George Stoehr, former president of Stoehr and Laudon, Inc., 1705 W. Clybourn, Milwaukee, Wisconsin, died June 25, after a two year illness. Mr. Stoehr had

been a sheet metal contractor for 40 years and was a former president of the Sheet Metal Contractors' Association of Wisconsin.

News Summary of the Month

(From page 72)

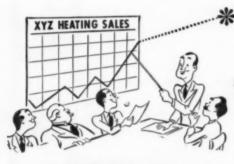
kind of equipment connected with the air conditioning

The exposition will occupy two modern buildings at State Fair Park; the Hall of Agriculture and the Poultry Building—both of which offer excellent facilities for display and demonstration of every piece of equipment in purifying, heating, cooling, and moving air, for both industrial and residential application.

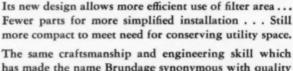
Dallas, the site chosen for the exposition, has for some time been the scene of great construction activity, and more is planned for the years to come. Construction now in process includes industrial projects in wide variety, as well as hotels, office buildings, and residential units to meet the great demand for housing.

According to the exposition management, leading manufacturers of heating, ventilating, and air conditioning equipment from all parts of the country will display their products. It is expected that many new developments in these fields will be shown for the first time in these displays.

The exposition is being managed by the International Exposition Company, with permanent headquarters at Grand Central Palace, New York City. This company







The same craftsmanship and engineering skill which has made the name Brundage synonymous with quality for 30 years is maintained in this latest product designed to meet increasing demands by homeowners for greater indoor living comfort.

For service, for quiet operation, for complete customer satisfaction, Brundage sturdy, all-steel cabinet unit is the best you can buy. Write for information.

Furnace Blower Twin Assemblies ... Exhausters ... Air-Renewers





Blower Specialists
Since 1919
611 NORTH PARK STREET
KALAMAZOO 11, NICHIGAN

GOIII THE BEST service the rest

Compare ANCHOR Heating Equipment with any other at comparable prices . . . and you'll see that ANCHOR products are made for service . . . not for SERVICING!

With ANCHOR, you make fewer of those free service calls that eat up fair profits so that your service crew can more profitably spend its time.

Over 80 years of experience in the heating equipment field goes into the design, development and construction of each of nearly 100 models of ANCHOR heating equipment! ANCHOR products are Nationally Known . . . and, Nationally in Demand.

Choice franchises are available. Write for complete details.

Anchor Division, Stratton & Terstegge Co., Inc.

P.O. Box 311, New Albany, Indiana





B&D Electric Porto-Shear cutting 16-gage stainless steel. Cutting action always visible to operator.



Versatile B&D Sander smooths cabinet corner. Same tool grinds, wire brushes, planes wood.



B&D ½" Standard Drill drilling holes in 10-gage frame. Other B&D Drills from ¼" to 1¼" capacities.



Fingles uses a B&D Bench Grinder for grinding down welds, beveling stainless steel edges, sharpening tools.

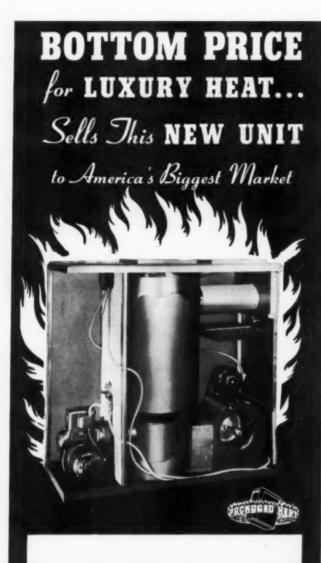
The way to solve more tooling problems ...

BLACK & DECKER the world's most diversified line of Portable Electric Tools!

By standardizing on Black & Decker Tools, The Fingles Company of Baltimore, Md. has saved time and money on scores of jobs like these. As a custom sheet metal shop, Fingles needs versatile tools to handle a wide range of jobs in the shop and on outside installations. Black & Decker "universal" tools give them this versatility—plus expert repair service from a convenient B&D Factory Service Branch to keep their tools in top production form. And every B&D Tool is quality-built, engineered and powered to turn out better work, with less effort, at lower cost! See your nearby B&D Distributor for free demonstrations. Write for detailed catalog to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Md.



OTHER BLACK & DECKER TOOLS used by The Fingles Co. include Electric Hammers for cutting mortar out of joints to install flashings and for drilling holes in concrete and brick; Electric Tappers for assembly work; Portable Grinders for grinding down welds where the tool must be brought to the work.



Delivered COMPLETELY PACKAGED

Sell luxury heat at a price within reach of America's biggest market . . . families building and renovating homes priced under \$10,000 . . . but don't cut your fair profit. Penn has done the profit cutting at the factory . . . paring its own margin because it anticipates big volume on its new Packaged Air Conditioner Furnace.

However . . . timely though it is . . . price is far from the whole story on this new unit. Here are just 3 of the other big features:

1. Delivered completely assembled in the juctory of the black of the state of

2—with all wiring done at factory.
2. Stainless steel construction gives smart,

modern appearance . . . extra long life.

3. Compact size—length 49" x height 50" x width 21½" — permits two men to carry it through an ordinary doorway.

RIGHT NOW is the time to offer a price conscious market this "little giant" among heating units. Production is limited—so don't delay writing for franchise and engineering information.

PENN BOILER AND BURNER MANUFACTURING CORP. LANCASTER, PA.

has managed the International Heating and Ventilating Expositions since their inception. Charles F. Roth is president of the company; E. K. Stevens is associate manager of the exposition.

New Gas Making Methods

REVOLUTIONARY NEW GAS MAKING methods (see AMER-ICAN ARTISAN, August 1948) developed under the gas production research program of the American Gas Association have spearheaded a marked trend to high Btu oil processes throughout the gas industry. More than thirty gas utility companies have installed or are negotiating contracts to install flexible, low cost oil processes to help meet peak load demands.

While the majority of the gas utility companies adopting the new gas processes are in the manufactured gas branch of the industry, several mixed gas and natural gas companies are installing high Btu oil gas apparatus as a standby facility for meeting peak loads or as a means of expanding present production and distribution capacity at a minimum cost.

The trend toward use of liquid fuels has intensified during the past year. This has been particularly true as regards the adoption of the Hall process developed under the direction of Edwin L. Hall, director of the A.G.A. Testing Laboratories at Cleveland and Los Angeles. This process proved that low cost, high carbon bunker oils can be used economically for manufacturing high Btu gas. Changes in refinery practices have brought greater supplies of these heavier oils into the market at lower prices. Manufacturers of gas making equipment have further developed the principles uncovered by the A.G.A. Gas Production Research program and found that some low quality, low cost raw crudes are ideal for gasification. There are prospects for abundant supplies of this material.

Galvanized Sheet Prices Drop

INLAND STEEL COMPANY has announced that because of decreases in the price of zinc it has been able to make simultaneous reductions in its prices of galvanized sheets under an automatic pricing schedule. Since zinc prices began falling from a high point of 171/2 cents per pound to the present price of 9 cents per pound, the reductions in galvanized sheet prices, varying according to gage, have been as much as \$20.00 per ton.

Homes Planned for Coal

WAYS TO SIMPLIFY THE HANDLING of coal or coke in homes have been under study at the University of Illinois for the past three years by Rudard A. Jones, research associate professor of architecture, under sponsorship of the solid-fuel industry. His findings have just been published by the Small Homes Council in a non-technical circular, "Homes Planned for Coal or Coke."

The ABC's of planning homes for solid fuel use, as set forth in the circular, call for the placement of "the driveway next to the fuel bin; the fuel bin, next to the heater room; the heater room, next to the ash-removal route; the ash-removal route, next to the driveway." Explaining that all this doesn't happen as an afterthought the circular tells how to plan in advance for MAKE BIG PROFITS!

WITH THE NEW IMPROVED MODEL C-600

HEAT CONTR FOR ALL HAND-FIRED

Here's your best buy in a damper motor type heat control. And it's still the biggest dollar value. The new Crise Model C-600 has everything to make your selling easier, to assure satisfied customers. New, attractive styling - new mechanical features and improvements. Get on the Crise bandwagon now and roll up sales volume. We'll show you how. Write today.



AJOR UNITS with new features



MOTOR

Patented ball bearing type. Reverses elec-trically. Built-in trans-former. Lubricated for life. Spring return should power fail.

Streamlined case richly finished in neutral gold. Heat anticipation feature. Adjustable differential. Silver contact points.



THERMOSTAT



(Hi-limit control)

"SURF-A-STAT"

Installs externally on furnace bonnet. Die cast housing. Calibrated dial, adjustable from 100° to 250°, with stops.



You get the complete package . . .

INCLUDING LIMIT SWITCH AND SPRING RETURN

then you handle the new Crise model C-600, there are no extras to buy, no dided items that might hinder the sale. Crise furnishes everything in one arton including limit switch and spring return that are usually extras.

Write for literature and name of nearest jobber

MANUFACTURING CO. COLUMBUS 16, OHIO

Why The NORMAN SOUTHERNER Was Selected To Heat The First Revere Quality House

It was only natural that a new and better type home such as the first Revere Quality House built in Houston, Texas, would select a new and better type of heating equipment such as the new Norman Southerner horizontally designed forced air gas furnace.

This revolutionary method of forced air central heating was developed by Norman engineers for small space and low cost heating installations. It permits a minimum of heating space in new home

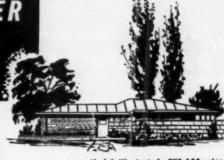
construction because it can be installed in the attic, closet, under floor, ceiling or stairs, or on service porches. The Southerner meets all safety requirements of AGA for this type of installation. Ideal for replacement.

Operates on natural, mixed, manufactured or LP gas. Performance-proven in thousands of installations. Available in 30,000, 60,000, 80,000 and 100,000 BTUin both Furnace and Unit Heater Models.

ATTRACTIVE DISTRIBUTOR AND DEALER TERRITORIES AVAILABLE



FIND OUT MORE ABOUT THIS NEW NORMAN SOUTHERNER



Model illustrated: FUB-100, size 21 1/4" high by 23" wide by 52" long.



NORMAN PRODUCTS CO., Dept. 24
1148 Chesapeake Ave., Columbus 12, Ohio
Please send complete details and information on the Norman Southerner and its 101
applications to the new construction and replacement heating market.

COMPANY

ADDRESS

CITY....

easy fuel and ash handling.

To demonstrate the ideas, the circular presents plans for a one-story basementless house, one-story house with partial basement, a split-level house, and a two-story house. In each, special features of fuel handling and ash removal are discussed. Many of the ideas in the circular can be applied to existing homes.

Among the suggestions:

"Locate the bin so that delivery can be made directly from truck: design the bin for easy filling.

"Make the bin large enough to hold at least half a season's supply of fuel.

"Design the bin so that fuel can be obtained without entering the bin; locate the heating unit near the bin.

"Build an adequate chimney near the heating unit.
"Check ash-removal features when selecting heating equipment. Make the ash-removal route simple and direct."

Copies of "Homes Planned for Coal or Coke" are free until Sept. 1. After that they will be 10 cents, the same price as 22 other non-technical circulars for homeplanners and owners which have been issued by the Small Homes Council at the University of Illinois.

Sponsors of the solid-fuel research project are Bituminous Coal Research, Inc.; the Anthracite Institute; and the American Coke and Coal Chemicals Institute.

March Furnace Shipments

MARCH SHIPMENTS of 41,376 warm air furnaces represented a 25 per cent increase over the 33,125 units that were shipped in April, according to the figures con-

tained in the Facts for Industry report of the Department of Commerce.

A break-down as to type of fuel showed that 18,900 solid fuel furnaces were shipped; 10,330 oil fired units and 12,146 gas fired furnaces. Gravity air circulation furnaces accounted for 52 per cent of the total shipments, forced air the other 48 per cent.

Basementless Houses Increase

ELIMINATION OF BASEMENTS in small homes to save costs is bringing increased use of concrete pier and grade slab foundations among local builders, according to reports of the Housing and Home Finance Agency on the Economy Housing Program. For best results in cooler climates, it is recommended that the crawl space under a house resting on piers should be enclosed with skirting and concrete slab floors should be insulated. Skirting can be of concrete precast in sections on the site or in a plant. Set in place carefully, the skirting forms part of the foundation.

Partial basements provide another economical means of lowering costs. When only part of the under floor area is excavated, piers can be used as inexpensive supports for floor joists. With the unexcavated area left as a crawl space, free circulating heat from the furnace helps warm the entire first floor.

Reduction of excavation and foundation costs can also be obtained from the use of factory made areaway walls of metal or cement asbestos board.



C. L. BRYANT'S famous SPHINX, quality and value leader for 20 years—now newly engineered by practical furnace men with exclusive features making it the easiest selling in the field! Famous patented SPHINX bunsen-type burner. Over 7500 sq. in. heating surface—exclusive corrugated heavy-gauge steel heat exchanger guaranteed for 10 years. Two large filters (20x20). Easy return connections. Easy installation with level-

ling screws—no concrete base. A completely-wired package unit. Compact modern size — 24½" x 25½" x 60¾". Minneapolis-Honeywell Modulating Thermostat and Valve actually maintains ¾ of 1° temperature differential —no "cold 70".



WRITE TODAY
FOR
SPECIFICATIONS SHEET
AND
DEALER PROFIT

Mr. Dealer -NOW YOU CAN BUILD PROFITS

People today are looking for VALUE. Send today for your copies of letters from actual dealers proving that the many exclusive features and obvious quality of the new SPHINX make it a faster and easier seller than the cheapest cut-rate furnace. "You don't SELL the SPHINX—you explain SPHINX features and the customer SELLS HIMSELF!" Its rugged, precision construction insures years of trouble-free service. Beautiful chrome-trimmed Coppertone Hammerloid baked enamel finish.

Separate primary air adjustments for each port mean full combustion. Hollow baffles warm secondary air.

C. L. BRYANT CORP.



148

AMERICAN ARTISAN, JULY, 1949

6 NOI

us

De

fin

mı

Co

job

no

ho

tha

AMERIC

NOW AVAILABLE

A complete reprint, under one cover, of Professor S. Konzo's invaluable series of articles —

The

"HOW, WHAT AND WHY"

of the New

Winter Air Conditioning Manual

Everyone who is now using or expects to use the new "Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems" will find Professor Konzo's series a source of much practical help in understanding the Code and correctly applying it to actual jobs. In this great series, Professor Konzo not only explains step by step exactly how to use the Code, but, in addition, tells in detail of the research and experience that is behind each step in the suggested procedures.

Price - Only \$1.00 per copy

AMERICAN ARTISAN

6 NORTH MICHIGAN AVE.

CHICAGO 2, ILLINOIS



TURNER

(No. 475)

Low Pressure

TINNER'S FIRE POT

Ready for operation in 5 minutes • Fuel capacity one gallon; burns for 9 hours on one filling . Safer . reduces fire hazard of old-style charcoal burners • Soldering iron rest keeps points of soldering coppers out of direct flame . . . saves re-tinning • Complete with Turner's exclusive "Carburetor Control" . . . providing solid blue flame with more perfect combustion; also a flame control-for exact heat desired-which automatically cleans the orifice, thereby eliminating need for separate cleaner wire O Construction assembly permits quick, easy accessibility and cleaning . . . windshield, top-plate, and bail handle are one unit, and can be lifted from tank in five seconds by loosening one wing nut • Burner coil made of extra-heavy seamless steel tubing . . . protected by sturdy outer jacket that maintains heat without overheating . . . can be generated and used in heavy wind • The combination may also be used for melting purposes . . . See Your Jobber!

THE TURNER BRASS WORKS

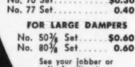
HEC KWIK-WAY DAMPER

Most Easily and Quickly
Attachable Sets on the Market
STURDY • RATTLE-PROOF
NO ANVIL REQUIRED

IDENTICAL 5/16"
RETRACTABLE BEARINGS

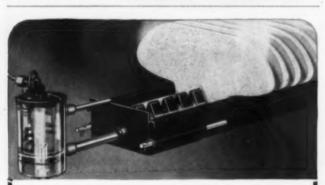
Simply slip the bearing over the edge of the damper at the bearing line. Lay on any firm surface and strike one solid hammer blow. The prong pierces the damper and is clinched securely in place by the heavily ribbed underside construction of bearing. Fastening is permanently solid, rattle-proof. Identical bearings with retractable bolt make easier installation of regular or splitter dampers in round or square ducts.





HART & COOLEY MANUFACTURING CO.
HOLLAND MICHIGAN

In Canada: Hart & Cooley Mfg. Co., Fort Erie, N. Ontario



—a profitable product for you

Humidifiers are a popular item with home owners right nowpeople recognize that they are a necessity for healthful heating.

A Complete Line for All Purposes:

- FLOTROL—the LEADING Humidifier for warm air or air conditioning.
- MICRO-FEED, the simple, low-cost control for drip feed operation.
- Monmouth HUMIDITY CONDITIONER, gas operated, for all radiator heated buildings.

Bulletin and prices on request.

THE CLEVELAND HUMIDIFIER CO.

7802 Wade Park Ave.

Cleveland 3, Ohio

MONMOUTH HUMIDIFIERS

INDUSTRY ITEMS

ROY H. WARMEE, formerly sales manager, Moduflow Division, Minneapolis-Honeywell Regulator Company, has joined the White Manufacturing Company, 2362 University Ave., St. Paul, as vice president and sales manager.

Mr. Warmee has spent many years in the heating industry and is one of the best known men in fuel as well as heating circles. Before joining Minneapolis-Honeywell Mr. Warmee spent ten years with the Philadelphia Coke Company of Philadelphia, a Koppers Company subsidiary, merchandising coke, heat regulators and coke stokers. He has written many articles on sales subjects for business periodicals and in 1947 he was awarded the Edmund F. Maier trophy for meritorious service to sales management and civic leadership in Minneapolis.

In making the announcement of Mr. Warmee's appointment, Mr. White said, "Recently the company has developed and will aggressively promote the Master Blowertrol which is designed to automatically control the blower of a forced air heating system for continuous air circulation.



Roy H. Warmee



Joseph Manning

APPOINTMENT OF JOSEPH MANNING as dealers' sales representative in the Portland, Oregon, area was recently announced by the Northwest Metal Products Company, Seattle and Kent, Washington, manufacturers of conductor pipe (downspout), and eaves trough, as well as oil fired heating appliances.

Mr. Manning has lived in Portland for more than thirty years and has been associated with the Marshall-Wells Company for the past 22 years. In addition to the city territory, he traveled the area close to Portland for several years.

Mr. Manning spent two years in the armed services, during World War II, one in this country and one in the South Pacific.

UNITED STATES STEEL SUPPLY company, warehousing subsidiary of United States Steel corporation, has added aluminum to its regular line of metal products, Leslie B. Worthington, president, announced recently.

He said arrangements have been completed with Reynolds Metals company to handle its complete line of aluminum mill and building products in the U. S. Steel Supply company's fourteen warehouses located in principal cities from coast to coast.

In commenting on the move, Mr. Worthington said:

Enjoy the DOUBLE ADVANTAGE of Selling and Satisfying with A-J Standard or Custom Made Registers and Grilles

1. A-J's Complete Line of Standard Registers and Grilles . . . offers you a wide variety of styles and designs to suit almost all heating, ventilating and air conditioning installations.

By stocking standard sizes and styles you are able to supply demand *immediately*.

All A-J registers and grilles are characterized by their superior appearance and construction. They are designed and priced to sell and satisfy in today's "buyer's market." A typical example of A-J quality is the popular No. 10 Directional Flow Register for forced air installations, illustrated below.



2. A-J's Custom Made Register and Grille Service . . . is provided for your convenience in supplying registers and grilles for those home and commercial installations that demand special sizes.

Don't lose a single order and profit opportunity — order custom made registers and grilles, made to your own specifications, from A-J. Special order inquiries are welcomed, and prompt price quotations will be submitted. Don't miss a single sale . . . investigate the Double Advantage of Selling the A-J line today! Let us quote on your stock and custom made requirements.

Jobbers, Write Today for Full Information



A-J MANUFACTURING CO.

2119 Washington St.

Kansas City 8, Mo.

You'll Sell Your Customers More When You

Sell Them Clipper

Not only do Clipper automatic gas-fired furnaces with the Multi-Stream Heat Exchanger offer efficient economical heating, but also modern air conditioning for the greatest living comfort.

COMPLETE RANGE OF SIZES. Clipper furnaces are built in a range of sizes from 80,000 to 200,000 BTU.

COMPETITIVE PRICES. Despite their fine engineering, heavy gauge metals, highly improved controls and other features, Clipper gastired furnaces are priced in competition with ordinary furnaces.

IMMEDIATE SHIPMENT. Due to the size of the Henderson plant, equipped with the most modern machinery and to the fact that the plant is located in one of California's most productive climates where steady home-owning mechanics are available, we are able to give you immediate shipment of any model.



Compact, with baked enamel finish, the Clipper is attractive for installation anywhere. Clipper units are easily installed even in a small closet. All Clipper furnaces, regardless of size, are shipped to you completely assembled, completely wired and individually tested at the factory.



Here is a typical Clipper air-conditioning furnace with front panels removed to show easy accessibility of controls, blower and burner You'll Find the Clipper Enables You to Sell More—For complete information on Clipper gas-fired units and also on the details of a profitable sales representation plan, fill out and mail this coupon.

HENDERSON FURNACE AND MFG. CO.

SEBASTOPOL, CALIFORNIA

Henderson Furnace and Manufacturing Co.
Sebastopol, California

I am interested in the sales opportunities of Clipper furnaces. Please send me complete information.

Name____

Address





FLOOR STAND



Mounted on this welded, all steel stand, your Beverly is in the correct position for most efficient cutting . . . is accessible from all sides . . . makes work easy to see from any angle. Top of heavy gauge steel is drilled for mounting Shear. 30" high, the Stand can be furnished with blank top for mounting other machines or tools. Top is 7" x 11", Floor space 24" x 30".

Write for Circular LY SHEAR MFG. CO. 3006 W. 111th Street CHICAGO 43. ILL.

"SHEAR IT CLEVERLY WITH A BEVERLY!"

UNIPACK... Since 1929



DEPENDABLE RUGGED QUIET

> Note that the cap bearing has been removed to show the bronze bearing with ring oiler.

Quiet As A Cat's Purr

Introduced in 1929, the Unipack has since been giving satisfying service in thousands of homes. Nineteen years and still going strong—for today the ever present demand for this dependable blower with rugged construction and quieter operation continues. Proof enough, we think, of its preference. Better yet, find out for yourself how superior and satisfactory the Unipack really is -write us now.



American Machine Products Co. MARSHALLTOWN, IOWA

"The distribution of aluminum by our company is evidence of our desire to satisfy more fully the metal requirements of our customers."

Donald F. Stone, manager of the company's newly created aluminum sales division, said that, for the present, aluminum mill products such as structurals, bars and sheets will be stocked only at the firm's Los Angeles, San Francisco and Chicago warehouses. He said it is planned that each of the company's warehouses will handle a full line of aluminum building products such as corrugated sheets, siding, etc.

JOSEPH T. RYERSON & SON, INC., steel distributors, held open house at their Philadelphia, Pennsylvania steel-service plant, 5200 Grays Avenue, Friday and Saturday, May 20 and 21, 1949 in celebration of the formal opening of their recently completed new, larger plant and office building and greatly expanded plant facilities.



About 2800 customers and friends of the firm visited the plant on Friday; employees and their families numbering about 500 were entertained by the management on Saturday. All were taken for a tour of the plant after which refreshments and dinner were served. Booths for displaying and highlighting the many different steel and allied products sold by the company were located along the route followed by visitors. A large tent was set up in which dinner was served.

W. A. Redpath, manager of the plant, was host at the dinner and plant tour. Company officials on hand to welcome guests included Edward L. Ryerson, chairman of the board of directors; Everett D. Graff, president; Robert C. Ross, assistant to the president; Harold B. Reeseler, Ainslie Y. Sawyer, and William Seymour, Jr., vice president, and C. L. Hardy, former manager of the plant and now assistant vice president.

NEW FACTORY BRANCH SALES and service buildings in Chicago, New York, Pittsburgh and Toronto, Canada, have been constructed recently by Independent Pneumatic Tool Company, manufacturer of Thor portable power tools.

The four new buildings, replacing previous office sites in the same cities, are completely equipped service stations staffed by factory trained engineers, and are conveniently located as sales headquarters for Thor distributors and users in the respective territories.

The Thor Chicago branch building, largest in the company's 20-city chain, is located at 1405 West Wash-

SKIL

AME

SKIL Bench Grinder 447

The big, full-duty grinder with the "little grinder" price

More Features . . More Quality . . . **More Work Capacity**



BIG, POWERFUL MOTOR

Quiet, vibration-free...ideal for sustained heavy duty service.

EXTENDED END BELLS

Extra clearance around wheels for easier use even with wire brushes or cloth buffs.

SEALED BALL BEARINGS Extra big, ball bearings sealed against dust and dirt for smoother operation-longer life.

OVERSIZE.

ADJUSTABLE, MACHINED TOOL RESTS

FULL-SIZE 15" SPINDLE A really full-size grinder —long 15" spindle.

Set-ups are simpler and faster with these easy-to-adjust tool rests.

HEAVY CAST BASE

Big, solid working base. Won't rock or "walk"—even when rock or "walk"-even when not bolted to bench.

REMOVABLE, CAST WHEEL GUARDS

Removable feature increases grinder uses. Guards are extra wide for use with wire brush wheels.



Full-sized SKIL Bench Grinder, Model 447, has the weight and power to handle your shop jobs. Sharpens, grinds, buffs or polishes. Extended end bell and wheel guard design provide extra work clearance that makes any job easier to do. So attractively priced you'll want Model 447s in several shop locations. Ask your SKIL Tools Distributor to demonstrate easy-to-own SKIL Bench Grinder, Model 447 today!

SKILSAW, INC. 3033 Elston Ave., Chicago 30, Ill. Factory Branches in Principal Cities In Canada: SKILTOOLS, LTD., 66 Portland St., Toronto, Ont.

e

9

SKIL TOOLS ARE MADE ONLY BY SKILSAW, INC.







and take advantage of...

- simplified purchasing
- complete selection
- simplified control
- lower shipping costs
- · uniform high quality
- prompt delivery



RECESSED HEAD SHEET METAL SCREW

61-270 CATCH





all these dependable National Lock items are ideal for use on:

- · space heating units
- · air conditioning equipment
- oil burners
- stokers
- gas heating units

write us for tull information · humidifiers

NATIONAL LOCK COMPANY

Rockford . Illinois

BARBER BURNERS

For Over 30 Years the Outstanding Conversion Burner



No. 49-108B

For dependability and efficiency, use Barber Gas Conversion Burners, made in sizes and capacities to fit all types of round or oblong furnaces and boilers. There is no comparison whatever between the average mixer-type gas burner and the Barber Vacuum pre-mixture, employing the famous patented Barber Impinged Jet. Equip your jobs with genuine Barber units.

Listed in A.G.A. Directory of Approved Appliances. Send for latest Catalog on conversion burners, all types of appliance burners, and pressure regulators.

THE BARBER GAS BURNER CO.

3704 Superior Avenue

Cleveland 14, Ohio

BARBER JET GAS BURNERS

for Furnaces, Boilers and Appliances



IT TAKES THE LOAD OFF THE FAN!

Aluminum louvers open fully, permitting capacity fan operation. New heavy reinforcement strip adds strength and long life to the louvers, assures quiet operation and perfect counterbalance, prevents rattling. Deep shroud protects shutter from high winds. Tie-rod, brackets and bearings inside frame, not exposed to weather. Special finish resists corrosion. Many other features.

Write for New Air-Flo Catalog 43-C
Illustrations and details of the complete Air-Flo line.

AIR CONDITIONING PRODUCTS CO

ington Blvd. The New York building is now located at 32-34 Greenpoint Ave., in the Long Island City section, the Pittsburgh building at 204 Thomas St., and the Toronto building at 1909 Davenport Road.

APPOINTMENT OF ROWLAND J. MILLER as vice president and general sales manager has been announced by Charles F. Lambert, president of Clayton & Lambert Mfg. Co.

Mr. Miller, a man of 21 years' experience in sales and business administration, 18 of which were in the water heater, refrigeration and heating equipment fields, joined the C & L staff as a sales manager last year. He has held previous positions as general sales manager for the Ohio Fuel Gas Co., Columbus, moving up from district manager positions at Toledo, Zanesville and Cambridge, Ohio. He also served at one time, as manager of the Electrical Insulation Division of Owens-Corning Fiberglass Corporation of Toledo, Ohio. Mr. Miller is a graduate, in Business Administration, of Ohio State University and is a member of the National Sales Executive Club.



R. J. Miller

P. C. Pfriem

Another Clayton & Lambert announcement told of the appointment of Peter C. Pfriem as sales manager, Furnace Pipe and Fitting division.

Mr. Pfriem has been in sales work for the past 15 years. He was previously associated with the Knapp Supply Company of Muncie, Indiana as manager of its Heating Department. Prior to that, he was a specialist on warm air heating for the American Radiator and Standard Sanitary Corp.

Mr. Pfriem is a journeyman sheet metal worker and a member of the American Society of Heating and Ventilating Engineers. He has been with C & L for eighteen months.

A NEW ADVERTISING CAMPAIGN promoting warm air heating, and pointing up the features of Continuous Air Circulation, has been announced by Owens-Corning Fiberglas Corporation, manufacturer of Dust-Stop filters employed to filter dust from the air stream.

The lead-off advertisement, in full color, is reaching approximately 7,300,000 readers through Better Home and Gardens and House and Garden. Supporting adaptations addressed to architects, contractors and others interested in home building are scheduled in Architectural Forum. Tie-in promotions for furnace manufacturers, jobbers and dealers are now being presented to the trade by Fiberglas representatives.

The first advertisement illustrates the pioneering days of forced warm-air heating, tells of early developments, brings the reader up to date and highlights the benefits of C.A.C. Spot illustrations further em-

fu

W

ily

or

AMER



Use Atlas furnace cabinets—boiler jackets—and blower housings . . . and cut costs in every direction! They're designed to lighten the load of your sales department . . . tailor-made for minimum cost installation . . . and specification-built to suit your furnace models—to fit your market. Yes . . . Atlas will add sales appeal to all your units, and cut costs, too!

D ... SALES APPEAL

Send Your Furnace, Boiler and Blower Specifications for Cost Estimates to:

> Otlas MANUFACTURING COMPANY

Eustis at Robbins St. Saint Paul 4, Minn.

CUTS INSTALLATION
COSTS, TOO!

S



Sell the

"SILENT"

GIVE YOUR CUSTOMERS THE KEEN BEAUTY AND PERFORMANCE OF A MODERN OIL BURNING AUTOMATIC WINTER AIR CONDITIONING UNIT

Sell the "SILENT". That's a sage bit of advice now that competition is getting tougher. It enables you to provide new and replacement prospects with a modern, automatic winter air conditioning unit, skillfully designed to extract maximum heat from the fuel and distribute evenly a clean, healthful flow of properly conditioned air.

You'll find other jobs easier to get and customer recommendations better when the low economy figures and superlative performance of the "SILENT" are passed along. We'll be glad to send more information.

PLEASE WRITE TODAY TO . . .

JACOB BRENNER COMPANY Fond Du Lac, Wis.

furnaces are desirable you'll find

the old, reliable Brenner Steel Weld a sterling performer. It's available in three sizes and easily adaptable to any size home

or small business establishment.

THE CINCINNATI ELBOW COMPANY

2617 Colerain Ave. CINCINNATI 14, OHIO





ALL SIZES
ALL GAUGES
ALL METALS



See Your Jobber

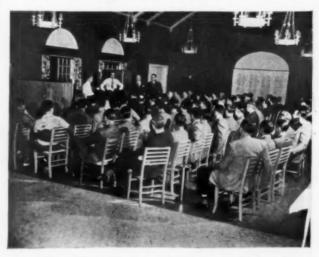


CONDUCTOR PIPE ELBOWS and SHOES

MOUNTING FUEL COSTS ARE CREATING MORE AND MORE STOKER CUSTOMERS FOR ME. I HAVE FOUND ECON-O-COL STOKERS MEAN FASTER SALES . . FEWER SERVICE CALLS! ECON-O-COL The "Stronghearted" Stoker BUILT BY COTTA TRANSMISSION COMPANY . ROCKFORD, ILLINOIS TWELVE SIZES. WRITE FOR DETAILS OF THIS COMPLETE LINE OF 30 TO 1250 LDS. PRECISION-BUILT, HIGHEST-PER HOUR QUALITY STOKERS

phasize C.A.C. advantages. Tie-in promotion materials to be made available through furnace manufacturers and jobbers include electrotypes and mats for local advertisements, decals, ad reprints, and other materials for direct mail and special selling programs.

ROBERTSON HEATING SUPPLY COMPANY, located in Alliance, Canton and Zanesville, Ohio, of which John Robertson is proprietor, held a showing of the new, 1949, line of Luxaire furnaces and air conditioning units, recently. The new models were displayed at the Alliance Country Club, Alliance, Ohio.



Models of the new Luxaire, gun type and pressure vaporizing type of oil burners were also displayed and demonstrated.

Mr. Robertson was Chairman of the meeting held in connection with the showing, at which 89 furnace dealers from eastern Ohio, western Pennsylvania and West Virginia were present.

Representing the C. A. Olsen Mfg. Company at the showing were C. L. Grandstaff, chief engineer, and E. E. Morris, district representative. James Crombie, sales manager of the Henry Furnace Company, Medina, Ohio, was also in attendance and addressed the dealers on the subject of "1949, a buyer's market and how to face it."

THE AUER REGISTER Co., Cleveland 14, manufacturers of registers and grilles, has appointed L. J. Krause Co., 200 Lumber Exchange, Minneapolis 1, Minnesota, as a factory representative and distributor. Mr. Krause will execute sales representative work in Minnesota, Iowa, North and South Dakota, Nebraska and western Wisconsin. He was previously with the Minneapolis-Honeywell Regulator Co. in various capacities, and is an associate member of Minnesota Chapter, A.S.H.& V.E.

THE AIR REDUCTION COMPANY, manufacturers of industrial gases and welding equipment, has announced the opening of a new oxygen plant in Flint, Michigan. The plant, built at a cost in excess of \$250,000, will produce more than four million cubic feet of oxygen per month to serve the industrial needs of Flint and surrounding areas.

The new plant will operate on a three-shift, 24-hour

AME

PORTABLE TEMPERATURE RECORDER . . .

Indispensable for SALES, INSTALLATION and SERVICE





"Very useful for selling installation jobs."

"Very satisfactory for recording outdoor temperature for 'degree day' operations." "Makes it easy to check proper thermostat location.

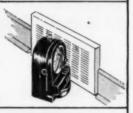
"Used all the time for balancing heating systems."

"Gives me proof of a good installation."

"Has been invaluable as proof in settling heating complaints."

> or mail coupon for **Bulletin 720**

"Helped me discover incorrect 'night set-back of clock thermostat in seconds instead of hours."



Ask your jobber about TEMPSCRIBE Recorders,

The TEMPSCRIBE Temperature Recorder gives continuous time-temperature records of room temperature or of air temperature at any specific point, such as at the thermostat, at floor and ceiling levels, and above the radiators or in front of warm air registers. The temperature graph, as recorded on a 4" chart, shows at a glance the highest and lowest temperature during the test period, duration of any temperature extreme, and frequency and spread of temperature fluctuations. The instrument is compact, self-contained; no electrical connection; requires no watching. Can be stood anywhere or hung on wall. Available in ranges to cover —30° F. to +160° F. temperatures. Choice of spring wound chart drives: 8 hour, 24 hour, or 7 day rotation.

BACHARACH INDUSTRIAL INSTRUMENT CO. 7000 Bennett Street · Pittsburgh 8, Pa.

Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh 8, Pa.

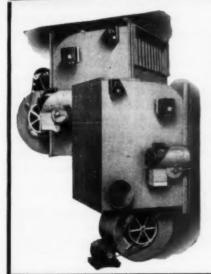
Send Bulletin 720 on TEMPSCRIBE Recorders to:

City and State We are: DEALER JOBBER MANUFACTURER



DOMESTIC AND INDUSTRIAL HEATING UNITS

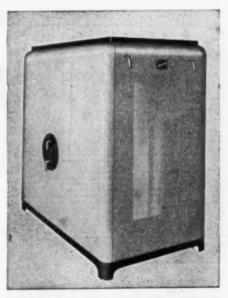
EASIER SALES AND MORE SATISFIED CUSTOMERS



The variety of models to suit practically every heating purpose makes QUICK HEAT a recognized profit builder for warm air heating dealers. Practical application of sound engineering prin-ciples combined with extensive experience has produced this highly recognized line of superior equipment. Performance and convenience of these units proves business building quality to dealers handling this line.

> Overhead Units For Ceiling or Wall Mounts

Dealers: WRITE FOR DESCRIPTIVE LITEKATURE



READY FOR INSTALLATION

Floor units are mounted on legs to prevent rusting of bottoms and eliminate air leaks. Factory assembled in attractive casing with new type heat saver and specially designed gun type oil burner. Convenient and quick in-

2140 Kasota Ave. St. Paul 8, Minn.



Act Now! Get in on this year's cleaning profits. Order a Grand Rapids Furnace Cleaner.

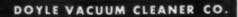
IT'S FAST—Handles twice as many jobs as the ordinary furnace cleaner.

IT'S THOROUGH—High velocity suction completely removes ashes, soot, scale and dirt from every type of heating plant.

IT'S COMPLETE — A packaged unit with practical cleaning attachments designed for fast, easy cleaning.

IT'S PROFITABLE—The troublefree operation and speedy service of the Grand Rapids Furnace Cleaner puts extra profits in your pockets.

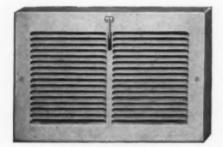
Send today for complete information about the Grand Rapids Furnace Cleaner.



227 Stevens St., S.W.

Grand Rapids 7, Michigan

SAVE \$ \$ By Using >



For SMALL HOMES & BUILDING PROJECTS

Here's a single valve register with adjustable fins that combines quality and economy. See how you can save on air conditioning and gravity base registers. Ask your supplier or write.

THE A & A REGISTER CO. 8327 Clinton Rd. Cleveland, Ohio

Geo. G. Auer, Pres.

day and will have a staff of between 15 and 20 employees. Leo Vansaw has been appointed plant superintendent.

In addition to oxygen manufacture, this plant will also be an acetylene gas supply point and a store room for welding equipment and supplies.



Norman Rowen—Richmond Philadelphia district manager—(2nd from right) shows Richmond literature to A. Greenspan (1st on left) of the Century Heat & Air Conditioning Co. and to F. W. Wackenhut (center) of F. W. Wackenhut Company prior to turning over the Richmond booth to them for the day.

A NEW IDEA in manufacturer-distributor-contractor cooperation was initiated by the Philadelphia district sales manager of Richmond Radiator Company at the Philadelphia Home Show recently. Norman Rowen, district sales manager for Richmond Radiator Company in the Philadelphia area, set up a rotating plan whereby local heating contractors manned the Richmond booth at the popular Philadelphia Home Show. This unusual plan amounted to turning over the entire Richmond display and booth to local contractors for their own use as a source of new business contacts. The Richmond distributors, naming two aggressive contractors each, set up the panel of contractors. The contractors selected then manned the booth, gave out heating literature with their own especially prepared sticker attached, made sales talks on the Richmond line and took down names of interested home builders.

IN LINE WITH INCREASED SALES ACTIVITY, Research Products Corporation announces the addition of Kenneth Lindquist to its sales force. For the present, Mr. Lindquist will handle the sale of R-P air filters and related products in some of the north central states.

Mr. Lindquist was formerly assistant advertising manager of the Gisholt Machine Company and served in the air forces in the European theater during the war.

R. M. Judd, president of the Premier Furnace Company of Dowagiac, recently announced that the company's subsidiary, Dowagiac Wood Products, was to be discontinued.

The Wood Products building of 20,000 sq ft, completed





treme care and

delivered to you with a minimum of delay-and when they are "Made-Rite" you know the job will be well done.

We are ready and anxious to deal with you and you'll be pleasantly surprised at the completeness of our line and dependability of our service.

We solicit inquiries on slitting of metal up to 36 inches wide and 14 gauge and lighter.

"Made-Rite" Co., Inc.

10th and Monroe St.

Newport, Ky.



NEW YORK 6, N. Y.



"The Source of Slack Period Dollars"

That is the way a grateful Super user refers to the Red Streak Furnace Cleaner. (Name on

The way to added income is easy when you clean heating plants with a Super. It's easy to sell cleaning jobs by phone. Need for repairs and replacements is revealed when you clean the plant and the first thing you know you are very profitably busy.

Anyone can operate a Super. It cleans chimneys too-from the bottom up. No danger to the operator-no disturbance to the household.

Send for a Super and try it for five days free. You may keep what it makes if you return the Super.

National Super Service Company, Inc. 1944 N. 13th St., Toledo 2, Ohio

National Super Service Company of Canada

Toronto, Ont.

Vancouver, B. C.

114 LIBERTY ST.

5649 FILLMORE ST., CHICAGO 44, ILLINOIS



WHITNEY METAL TOOL COMPANY 39 YEARS EXPERIENCE



WHITNEY-JENSEN

A lightweight tool that has found wide acceptance because it is durable, powerful, casy-to-use. The No. 5 Jr. has an adjustable locating stop clearly graduated to permit quick setting to any throat depth up to 2°. Furnished complete with seven punches and dies in strong metal carrying case. Capacity — ¼ hole through 16 ga. mild steel Overall length — 8½ Height of Tap — ½ Weight — 2½ lbs.

WHITNEY METAL TOOL COMPANY
91 FORBES STREET, ROCKFORD, ILLINOIS

in 1946, has been leased to the government as an armory. The commanding officer, Capt. H. Pond, took possession in early June. All wood working machinery and lumber on hand will be sold.

"Elimination of our Wood Products Division," said Mr. Judd, "will enable us to devote our full time to the management and operation of the Premier Furnace Company which celebrated its thirtieth birthday in March. As it has always been our earnest desire to concentrate our efforts in expanding the Premier Furnace Company, we welcomed this opportunity to lease our Wood Products building to the government."

HARRY J. WINES OF New York City has been named sales manager of the automatic heating division of the General Electric Company's Air Conditioning Department, it was announced by H. M. Brundage, manager of the division. In his new capacity, Mr. Wines will be responsible for all departmental sales of heating equipment.

Mr. Wines has had extensive experience in the merchandising field. He was formerly vice president in the sales division of the Zenith Radio Corporation, and for 16 years was sales manager with Frigidaire and Delco Division of General Motors Corporation in New York. He joined General Electric in April of this year.



H. J. Wines



L. Smith

OSCAR C. PALMER, owner-president of Palmer Manufacturing Corporation, Phoenix Arizona, has announced the purchase of the Pacific and Superior Heating divisions of the Naco Manufacturing Corporation of Los Angeles. Over \$600,000 was expended by Naco during the last two years in design and extensive tooling to produce shallow floor furnaces, console models, duct heaters and ceiling unit heaters, all gas fired. All of this equipment will be used and the Palmaire Heater division will absorb the Pacific and Superior production.

Another announcement made by Mr. Palmer concerned the appointment of Leetate Smith as general sales manager of the Palmer company. Mr. Smith has an outstanding sales record in the heavy appliance field and is a member of the National Federation of Sales Executives.

ON JUNE 1, 1949, the Standard Plumbing Supply Co., Inc., 121-123 Washington Avenue North, Minneapolis, Minnesota, wholesalers of plumbing and heating merchandise, were selected as the exclusive distributors for the state of Minnesota of the entire Armstrong furnace lines.

Standard is now setting up dealer distributorships on an exclusive franchise basis in designated areas

2

PIPE AND FITTINGS GUARANTEED QUALITY!

All Ajax fittings are made of high-grade, full gauge sheets ... no seconds used! Quality is fully guaranteed. Your order, large or small, receives prompt, personal attention.

For help on your heating problems our engineering department is at your service. Contact us . . . we'll gladly work with you.

Write for catalog of Furnace Fittings.



Scientifically designed to reduce air friction



Ajax Furnace Fitting

BLOWERS

Air Conditioning Furnace Manufacturers



The New Bishop & Babcock Air Conditioning Blower Assembly Type "AC"-Design 2

The New Bishop & Babcock Blower Wheel For Air Conditioning **Furnace Blowers**





The New Bishop & Babcock All Stamped Housing Assembly and Component Parts

Write for Bulletin No. 115

MASSACHUSETTS BLOWER DIVISION

The BISHOP & BABCOCK Mfg. Co.

REPAIR PARTS

PEERLESS

Available for Immediate Delivery

Order from Peerless today repair parts for all makes of furnaces and boilers. Also, fittings, registers, blowers, electric controls, and other warm air heating requirements.

If you do not have a copy of our latest Parts Catalog, send for it today.

Pioneers in warm air heating equipment for almost half a century.

Peerless has a warm air furnace for every size home and type of fuel. Order today for immediate delivery.

Peerless Foundry Company

1853 Ludlow Ave. Indianapolis 7, Ind.

The Cincinnati Sheet Metal & Roofing Co. 216-20 E. FRONT ST. CINCINNATI, OHIO



Check up on this

WARM AIR CONDITIONER

BUDGET PACKAGE

Designed for

LOW COST INSTALLATION HIGHBOY OR LOWBOY

85,000 to 200,000 B.T.U.

READY TO INSTALL

MODEL 85 HIGHBOY For Homes without Basements A complete package including: furnace with jacket mounted, blower, filter, motor, Oil Burner and all controls. A beautiful unit famous for low fuel cost.

Write For Dealer Franchise Program



GENERAL OIL BURNER CORP.

2300 Sinclair Lane

Baltimore 13, Md.







WHITNEY-JENSEN No. 5 Jr. HAND PUNCH

ightweight tool that has found wide acceptance ause it is durable, powerful, easy-to-use. The 5 Jr. has an adjustable locating stop clearly ause it is durable, powerful, easy-to-use. The 5 Jr. has an adjustable locating stop clearly luated to permit quick setting to any throat th up to 2°. Furnished complete with seven thes and dies in strong metal carrying case. 1/4 hole through 16 go, mild steel Overall length — 81/4 Height of Tap — 1/4 Weight — 21/4 lbs. Write for our latest Catalog.

WHITNEY METAL TOOL COMPANY 91 FORBES STREET, ROCKFORD, ILLINOIS

in 1946, has been leased to the government as an armory. The commanding officer, Capt. H. Pond, took possession in early June. All wood working machinery and lumber on hand will be sold.

"Elimination of our Wood Products Division," said Mr. Judd. "will enable us to devote our full time to the management and operation of the Premier Furnace Company which celebrated its thirtieth birthday in March. As it has always been our earnest desire to concentrate our efforts in expanding the Premier Furnace Company, we welcomed this opportunity to lease our Wood Products building to the government."

HARRY J. WINES of New York City has been named sales manager of the automatic heating division of the General Electric Company's Air Conditioning Department, it was announced by H. M. Brundage, manager of the division. In his new capacity, Mr. Wines will be responsible for all departmental sales of heating equipment.

Mr. Wines has had extensive experience in the merchandising field. He was formerly vice president in the sales division of the Zenith Radio Corporation, and for 16 years was sales manager with Frigidaire and Delco Division of General Motors Corporation in New York. He joined General Electric in April of this year.



H. J. Wines



L. Smith

OSCAR C. PALMER, owner-president of Palmer Manufacturing Corporation, Phoenix Arizona, has announced the purchase of the Pacific and Superior Heating divisions of the Naco Manufacturing Corporation of Los Angeles. Over \$600,000 was expended by Naco during the last two years in design and extensive tooling to produce shallow floor furnaces, console models, duct heaters and ceiling unit heaters, all gas fired. All of this equipment will be used and the Palmaire Heater division will absorb the Pacific and Superior production.

Another announcement made by Mr. Palmer concerned the appointment of Leetate Smith as general sales manager of the Palmer company. Mr. Smith has an outstanding sales record in the heavy appliance field and is a member of the National Federation of Sales Executives.

On June 1, 1949, the Standard Plumbing Supply Co., Inc., 121-123 Washington Avenue North, Minneapolis, Minnesota, wholesalers of plumbing and heating merchandise, were selected as the exclusive distributors for the state of Minnesota of the entire Armstrong furnace lines.

Standard is now setting up dealer distributorships on an exclusive franchise basis in designated areas

2

PIPE AND FITTINGS GUARANTEED QUALITY!

All Ajax fittings are made of high-grade, full gauge sheets ... no seconds used! Quality is fully guaranteed. Your order, large or small, receives prompt, personal attention.

For help on your heating problems our engineering department is at your service. Contact us . . . we'll gladly work with you.

Write for catalog of Furnace Fittings.



Scientifically designed to reduce air friction



Ajax Furnace Fitting

The Cincinnati Sheet Metal & Roofing Co.
CINCINNATI, OHIO 216-20 E. FRONT ST.

BLOWERS

Air Conditioning Furnace Manufacturers



The New Bishop & Babcock Air Conditioning Blower Assembly Type "AC"—Design 2

The New Bishop & Babcock Blower Wheel For Air Conditioning **Furnace Blowers**





The New Bishop & Babcock All Stamped Housing Assembly and Component Parts

Write for Bulletin No. 115

MASSACHUSETTS BLOWER DIVISION

The BISHOP & BABCOCK Mfg. Co.



Check up on this

WARM AIR CONDITIONER

BUDGET PACKAGE

Designed for

LOW COST INSTALLATION HIGHBOY OR LOWBOY

85,000 to 200,000 B.T.U.

READY TO INSTALL

MODEL 85 HIGHBOY For Homes without A complete package including: furnace with jacket mounted, blower, filter, motor, Oil Burner and all controls. A beautiful unit famous for low fuel cost.

Write For Dealer Franchise Program



GENERAL OIL BURNER CORP.

2300 Sinclair Lane

Baltimore 13, Md.

PEERLESS

REPAIR PARTS

Available for Immediate Delivery

Order from Peerless today repair parts for all makes of furnaces and boilers. Also, fittings, registers, blowers, electric controls, and other warm air heating requirements.

If you do not have a copy of our latest Parts Catalog, send for it today.

Pioneers in warm air heating equipment for almost half a century.

Peerless has a warm air furnace for every size home and type of fuel. Order today for immediate delivery.

Peerless Foundry Company

1853 Ludlow Ave. Indianapolis 7, Ind.

LOWN SLIP ROLL FORMING MACHINES



San Angelo Foundry & Machine Co.

San Angelo, Texas E. Upton & SFE Tracks
Distributors in Most Principal Cities



finest -

strongest

beveled edges
fabricated metal
more free air space
solid construction
no loose parts
ultra-strong baked on
oak finish, longer
wear, matches
flooring. Made in
all standard sizes

Floor Registers



- Cold Air Faces
- FORCED AIR REGISTERS-Prompt Delivery Standard Sizes
- MIRRO-GLO LINE Bathroom Medicine Cabinets
- PERFORATED METALS FOR EVERY INDUSTRIAL USE
 Write for complete information and price lists

STANDARD STAMPING & PERFORATING CO.

throughout the state. An extensive program is under way to supply all franchised dealers with a well-trained Armstrong selling and service organization.

In conjunction with this organization, specially trained men are now in the field to aid the dealer in the installation and promotion of sales.

Standard's motto of "Sell—And Help Sell" will apply in the sales and promotion of Armstrong furnaces throughout the state of Minnesota.

DIRECTORS AND OFFICERS of the Timken-Detroit Axle Company commemorated the 40th anniversary of the founding of the company at a luncheon held in Detroit.

Colonel Herbert W. Alden and Eugene W. Lewis, two of the six original founders of the company, took part in the celebration. A third surviving founder, William R. Timken of New York City, was unable to attend. Colonel Alden, who at 78 is still active in the business, continues to put in a full day's work in his office as director of engineering. Mr. Lewis, who was associated with the company in its earlier days, is now chairman of the board of the Industrial National Bank of Detroit.



Colonel Alden (left) receives tray from Williard Rockwell

Manufacturing operations have been carried on continuously during the last 40 years in Detroit at the location of the company's original plant on Clark Avenue, Walter F. Rockwell, Timken-Detroit Axle president, said. Since its inception in 1909 the company has grown with the automotive industry and today, in addition to operating two plants in Detroit, has plants at Oshkosh, Wisconsin, Jackson, Michigan, Utica, New York, Ashtabula and Kenton, Ohio, and New Castle, Pennsylvania. Its Silent Automatic division manufactures a complete line of oil, gas and coal burning equipment for automatic home heating as well as coal burning equipment for commercial and industrial heating uses.

At the conclusion of the luncheon Willard F. Rockwell, chairman of the board, presented Colonel Alden with a silver tray suitably engraved in recognition and appreciation of his 40 years of service to the company.

THE KNAPP SUPPLY COMPANY of Muncie, Indiana has published a booklet to commemorate the 75th anniversary of the founding of the firm. A wholesaler of

SIMPLIFY YOUR BUYING

You can save TIME by combining your orders for Conductor Pipe, Gutter, and Accessories with your orders for Galvanized Pipe, Fittings, Registers, and Cast Iron Furnace and Boiler Repairs.

ACT NOW! Your ordering will be easier, faster, and more economical when you buy in one large order

from

Iowa's Largest Heating Wholesaler

DES MOINES FURNACE & STOVE REPAIR CO.

Des Moines, Iowa

SEQUOIA FURNACE

New "Slim" Design requires





Series "UM" Gas-Fired

Only 20" wide and 30" deep, Sequoia's new 70,000—BTU WINTER AIR CONDITIONER saves valuable floor space in basement, kitchen, utility room or closet. Ideal for small homes and housing projects. For larger homes, full range of sizes up to 175,000 BTU, with lines correspondingly slim.

Streamlined and handsome, Sequoia adds beauty to the home. It serves dependably, quietly, automatically—the year around. It's A.G.A. approved for natural, manufactured and liquefied petroleum gases . . . for both high and low altitudes.

Here's a furnace that will move fast from your sales floor. Ask now for full information on this most modern of lines—then judge for yourself!

Inquire of Your Jobber, or Write-

SEQUOIA MANUFACTURING COMPANY

1000 Britton Ave.

San Carlos, Calif.



Performance Plus! ATH-A-NOR

Coal - Gas - Oil FURNACES

JOHN L. SULLIVAN became the world's heavyweight champion in 1889 by knocking out Jake Kilrain after 75 rounds of bare knuckle fighting.



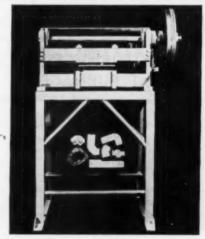
THE PERFORMANCE PLUS of ATH-A-NOR has been proven thousands of times every year for a half century. Be sure of Higher profits—Be sure of complete customer satisfaction—you can with ATH-A-NOR—it gives more—Write or wire for details.

MAY-FIEBEGER COMPANY

Newark

Ohio

A NEW TYPE PUNCH PRESS THE FALLSINGTON HUSKY



THE HUSKY PRESS illustrated above is available in two models. H24" and H36". The bed area is 8" x length of machine. Sample cuts are also illustrated above. These and hundreds of other shapes can be made by the standard Husky—in steel up to 24 ga., and 16 ga. in aluminum. The Husky Press can be made for heavier gages upon request. Dies for these presses may be obtained at great savings. Write to us for free quotation and state your particular problems.

FALLSINGTON MANUFACTURING CO.
FALLSINGTON, PA.





MONCRIEF'S New Line of Pressure Vaporizing Oil Fired Units

- GAS FURNACES
- COAL FURNACES







No. VL-65
Air Conditioning Unit
76,000 B.T.U. Output
75,100 B.T.U. Output
76,000 B.T.U. Output
76,000 B.T.U. Output
76,000 B.T.U. Output

We Carry a Complete Line of Heating & Sheet Metal Supplies

Write or telephone for list of sizes and price sheet.

io aam letam daading

3733 South Rockwell Avenue Chicago 32, Illinois

warm air heating equipment, the company was started at a time when there were very few supply houses and a considerable sales territory was covered. As more companies entered the field the territory shrank antil today there are 9 salesmen covering a 50 mile radius around Muncie. Despite the smaller sales area the dollar volume of the business has increased many times. The booklet tells some of the interesting history of the company and lists some of the items which used to be carried and seem humorous in the present day and age.

WHITE-RODGERS ELECTRIC COMPANY has announced the appointment of Arnold E. Petersen as manager of his northeastern division headquarters, New York City. At the same time E. E. Harwood took over as manager of the Pittsburgh, Pennsylvania district.

WILLIAM R. Egan, Denver, has been appointed district representative for the Janitrol space heating division of Surface Combustion Corporation, Toledo, Ohio.

Mr. Egan was a salesman with the Public Service Company, of Denver, after serving in the Army. As a member of the 20th Air Force, he was credited with 35 combat air missions over Japan.

A past Commander of the Leyden-Chiles-Wickersham Post No. 1 of the American Legion, Mr. Egan is now a district commander of the Legion.







L. S. Cotherman

L. S. Cotherman has joined the sales force of Skuttle Manufacturing Company and will represent the company in the state of Ohio and the western part of Pennsylvania.

Mr. Cotherman has an extensive background of sales experience and at one time operated the L. S. Cotherman Improvement Company of Erie, Pennsylvania. His most recent connection was with the French Company of Meadville, Pennsylvania.

Conco Engineering Works, Mendota, Illinois, has purchased exclusive manufacturing rights to the portable electric radiator recently developed by the Morton Gregory Corporation of Toledo, Ohio. Production on the product will begin immediately in the Conco plant at Mendota, Illinois.

The new portable electric radiator is being manufactured to retail at a price which it is believed will be attractive to a mass market since the heater has many applications in the home, garage, workshop, cabin and

Distribution arrangements are now being set up with jobbers on a nation-wide basis.

A REAL Time Saver



7⁶⁰ No. 4B PUNCH by Whitney

This punch is accepted by leading contractors and dealers as a real time-saver in the shop and on the job. Men who use it every day know it can't be beat for clean, fast punching. Has a capacity of 1/4" through 16 ga., weight 3 pounds, 81/2" in length, depth of throat, 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key.





52 STATE STREET . MANKATO, MINN.

Now Only \$2.00 for This Outstanding Book on Air Conditioning

The Third Edition of

AIR CONDITIONING FOR COMFORT

by SAMUEL R. LEWIS

288 Pages-61/2" x 91/4"-Cloth Bound

Easy to understand . . . accurate . . . comprehensive . . . these are the features of this third edition of Samuel R. Lewis' well-known AIR CONDITIONING FOR COMFORT.

Fundamentals are fully and clearly covered. Correct procedure in designing complete systems for both residences and large buildings is explained step by step. In addition, considerable original data on such subjects as standards, noise control, measurements, and fire protection codes has been included.

Send \$2.00 for a copy today to the address below. We know you will consider this one of the finest air conditioning books you have yet seen, but if you should be dissatisfied with it for any reason whatever, your money will be promptly returned to you.

KEENEY PUBLISHING COMPANY

6 No. Michigan Avenue

Chicago 2, Illinois

JOHNSON



An efficient furnace for any shop. Produces highest temperatures without forced air blast. Economical in operation. Excellent for heating largest soldering coppers, stenciling and branding irons, for tempering, case hardening, annealing—and for soft-pipe and metal melting. Lid on hood may be removed for 22 lb. capacity melting pot. Refractory lined firebox $6\frac{1}{2}$ x 5 x $6\frac{1}{2}$.

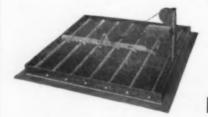
Write for Free Catalog of JOHNSON Bench and Soldering Furnaces, Torches and Blowers.

> Johnson Gas Appliance Co. 580 E. Avenue N.W., Cedar Rapids, Iowa



CEILING SHUTTER

with Mercury Switch . . . for Attic Ventilation



AS 2 SAFETY FEATURES

THE "Celo" Type Ceiling Shutter introduces two important safety features in attic ventilation. FIRST, it synchronizes the starting and stopping of the fan with the opening and closing of the shutter. SECOND, it provides automatic closing of the shutter and automatic stopping of the fan in case of fire. Built in square sizes by the inch from 24" x 24" to 48" x 48", and in rectangular sizes from 12" to 48" wide, and up to 72" long. Also supplied without mercury switch, if desired.



ELGO SHUTTER & MFG. CO.

2738 W. Warren

Detroit 8, Mich.

Kruckman's Washington Letter—

(From page 63)

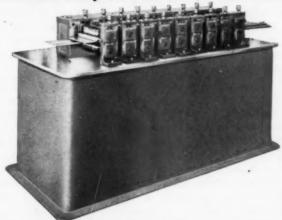
War Production Expanding

And they will tell you that it will be literally impossible to continue the existence of this nation without building up a great war machine in this country as well as among the nations in the Atlantic Pact. It was the purpose of President Truman's Little Rock speech to lay a broad foundation for this program, which is to be carried out during the next two years. Russia today manufactures daily more war material than the United States and all the nations in the Atlantic Pact combined. It is the program of the Atlantic Pact Allies to build up war material production the next two or three years, not only to overtake the production of the Russians, but to justify our potential which is far greater than that of the Russians. Obviously whether or not this will be possible depends upon the Russians. They are expected to start something before we can catch up with them in production, possibly not later than next August when Europe's crops have been harvested and the roads are in their best condition. There is a strong hunch prevalent here that they may attack Turkey anytime. They have 100 airborne divisions on Turkey's borders, as well as numerous other wellequipped military formations. The Turks expect an incident almost daily. The Russians regard the war against the Turks and the Greeks as a local war; we would naturally regard it as a war aimed at our safety. Russia wants to get to the Mediterranean, through the Dardenelles, to establish bases for her great submarine fleets in order, among other things, to cut off the oil coming from Arabia.

Depression May Never Come

The point is, the vast and inevitable expenditures ahead, plus the still unsatisfied needs of the people, indicate that the actual depression is two years away, if it ever comes. They also think that the present recession is largely a compound of inspired fear, and deliberately engineered regression. They see the bogeyman of Fascism, the effort to destroy the unions, and the program to establish a Corporate State, behind much of the present uncertainties and insecurities. They attribute the drift towards greater concentration of power in Washington, or federalization, to the great monopolistic corporations, as well as to the socialistic and communistic minded liberals. They believe that these forces are deliberately fostering a feeling of economic insecurity in order to bring some kind of a "man on horseback" into the picture. It is pointed out that the muddle and bewilderment existing throughout the country is reflected in the muddle and confusion among most of the members of Congress. The best types of persons in Congress are the first to tell you, off the record, that this Congress is much worse in performance and quality than the last, muchcriticized Congress. They point out that the paralysis, which has stopped the ordinary process of legislative functioning in this session, is comparable to the futile character of the Parliament in Italy, which vainly tried to do something at the time when Mussolini's

Formed Shapes ... 5000 Feet Per Hr.



Former method required several press operations to produce the wide shape shown above. Now flat strip is fed in and finished product rolls out . . . and at a speed greater than any one of the several press operations required under the old method.

On any production forming operation on pcs. 12'' or longer there is a good possibility we can save you over 50% on fabricating costs. Machine is shipped with all tooling mounted ready to go into immediate production on your part.

Sketch or sample will bring proposal.

DAHLSTROM MACHINE WORKS, INC.
4974 N. Elston Ave. Chicago 30

THIS LABEL IS YOUR ASSURANCE OF THE BEST FURNACE PIPE AND ELBOWS OBTAINABLE.



THE BETTER DEALERS IN THE MID-WESTERN AND ROCKY MOUNTAIN STATES INSIST UPON SUPERIOR FURNACE PIPE AND ELBOWS. MANUFACTURED ONLY BY—

SUPERIOR PRODUCTS CO.

606-10 South 14th St., Omaha 2, Nebraska



STANDARD FUEL ENGINEERING CO.

FOUNDED 1914

667 POST, S., DETROIT 17, MICH.

• There's a Hy-Duty properly sized for hundreds of jobs where large volume, low velocity and quiet are

erly sized for hundreds of jobs where large volume, low velocity and quiet are demanded—double inlet or single—top or bottom motor mounting—all discharge positions—200 c.f.m. to 15,000—heavily constructed—looks and finish to stack up with the best jobs and priced right.





A new, high powered, quiet, direct driven, single inlet Hy-Duty blower with a wheel 5" diameter, 3" wide. Immediate delivery, attractive price, suitable for a multitude of small air handling jobs.



SEND FOR LITERATURE AND ENGINEERING INFORMATION

BLOWERS . ATTIC FANS . EXHAUST . PORTABLE OR WINDOW FANS

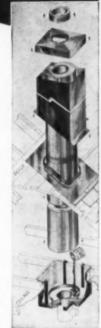
SCHWITZER-CUMMINS COMPANY
VENTILATING DIVISION . INDIANA POLIS 7, INDIANA
Fine Blowers and Fans for over 30 Years

TENNE IN THE

Easy Sales
Sell VAN-PACKE
Packaged
Chimneys FOR ANY HOME

- · Hundreds of Homes Need New Chim Old homes, new homes, summer cabins, motels, tourist cabins, resorts—there's a vast ready market now.
- Safest Chimney Ever Built Underwriters' Lab. approved in place of brick. FHA accepted for all fuels in any type home . . . one or two story.
- Nationally Advertised Thousands of inquiries from our ads are referred to dealers. Selling literature, newspaper mats free.
- · Costs 20% to 40% Less Than Brick Easily installed, summer or winter by anyone in 3 to 4 hours. Lightweight, needs no foundation. Suspends from ceiling or floor joists. A more efficient chimney with better draft.
- Completely Packaged Easy to handle, minimum stock enables you to supply any I or 2 story house with any roof pitch. Furnished complete, all parts for entire installation.
- Liberal Discount to Dealers Ask your jobber about Van-Packer Chimneys or write direct.

VAN-PACKER CORP. 124 West Adams St., Chicago 3





PENN-AIRE FURNACES

Winter Air Conditioning and Gravity

CAST IRON, COAL FIRED

Popular Price

Practical Design

Economical Operation

UNION MANUFACTURING CO. INC. Boyertown, Pa.

blackshirted Fascisti marched in and took over the government with the enthusiastic approval of the people. They tell you they often hear from their constituents the opinion that there do not appear to be any real leaders in Congress or anywhere else in Washington and that it would be an answer to a nation's prayer if some strong man, like F.D.R., might again appear and direct matters.

It will be interesting to watch a bill introduced by Senator O'Mahoney, chairman of the Senate Committee on Interior and Insular Affairs. This rather innocent-sounding bill, on which hearings began early in July, seeks to authorize and finance a basic survey of the elemental natural resources of the United States. It is to begin with a water survey, the Weather Bureau to do part of the work which applies to rain, snow, and other precipitation, until it reaches the earth; thereafter, the work is to be done by the Geological Survey, to determine where the water is located. Next step is to determine what may be done with the water on the surface and underground, in rivers, lakes, ponds, swamps, and other pools on the surface as well as in subterranean lakes and pools, and how it may be applied for the greatest good of the greatest number of people. The information today is only available in bits and pieces, the fragments being so widely scattered in the various agencies that the missing links prevent proper over-all knowledge and understanding. The same program applies to power, minerals, timber, and similar resources. It is intended to schedule surveys of every basic resource, and to organize the information obtained in such manner that the Government may utilize some of these resources for the common good, in a more efficient manner than they are used today.

This naturally will be of deep interest to private business as well as to those who are interested in public enterprises. On the whole, the tendency in this development is to form a new concept of the organization and function of Government. It leads clearly to the thought that the great resources must be applied for the common benefit through the agency of great units not unlike large corporations. In other words, the Government would become less political in the present sense, and more functional in the sense of service and economies. The new concept would naturally require the eventual selection of the Congress from among trained people of industry, commerce, professional and technical skills, and skilled workers, rather than the haphazard manner of making the choice which exists today.

Advertising Budget

(From page 68)

ing the company from a quality (or sometimes from a price) viewpoint. Others want to bring in immediate dollars and cents.

What your advertising should accomplish is a governing factor in how much you should decide to spend. The heating contractor who wants to do both an institutional and a selling job must obviously allocate a greater amount of advertising money than his competitor who desires only sales from his advertising.

5. How large is my selling territory? If you are ad-

Reinhard's Air-Lock

CONVERSION

GAS BURNER



Quality Products for Over 47 Years

mplete Line of Gas Conversion Burn
Industrial

The House of

11 South Ninth St.

Minneapolis 2, Minn

It pays to buy a good tool . . .

It pays to buy a

DOUBLE SUCTION FURNACE CLEANER

Machine can be separated in 2 parts for easy carrying . . . and it's built to last, giving long and efficient service. Two efficient service. Two fully protected fans attached directly to the heavy duty motor

and mounted beneath can give low center of gravity.

KENT Products are BUILT TO LAST!

Backed by 36 Years' Experience

KENT Features

- No Outside Dust Bag
- Bag Easily Emptied
- Powerful Double Suction
- · Fully Guaranteed

THE KENT COMPANY, INC.

435 Canal Street

Rome, New York

Representatives in Principal Cities

Imitation is Sincerest Flattery... ORDER FROM YOUR JOBBER ..

Sheet Metal Machinery Pittsburgh Lock Machines Stovepipe and Elbow Machines Roll Forming Machinery and Dies

Maplewood Machinery Co. 2634 Fullerton Avenue Chicago, III.

*********** Heating Sheet Metal



Air Conditioning Supplies

Furnace pipe, adjustable elbows and Fittings

ALSO: Complete line sheet metal hand tools

Frank X Enderle, Inc., Ltd.

1600-1700 San Fernando Road, Los Angeles 41, Cal.

EFFICIENTLY DESIGNED SATISFACTION ASSURED



Established 1906

A cubic foot of air has a certain weight. It takes mechanical power to lift and expel that weight. A hole in the roof, covered, will not do. A Uno Turbine Vent will.

Write for literature and prices. Jobbers in 40 States.

UNO VENTILATOR CO.

Cliftondale Sta.

Saugus, Mass.

ONE SUPPLY SOURCE

Quick Service Since 1882



Sell Repairs Increase Your Profits

Consumer demand for repair jobs is increasing and this means more profitable business for you. You can complete all your repair jobs more quickly, at less cost and with greater profit when you order all your replacement parts for furnaces, boilers, stokers, oil burners and stoves from the OMAHA STOVE REPAIR WORKS. Complete stocks of repair parts make it possible for us to fill 98% of all orders the day they are received which prevents job delay and pleases your customers. We are also set-up to give quick service on new Waterman-Waterbury furnaces, blowers, fittings, registers, incinerators, water heaters and all types accessories and sundry items.

OMAHA STOVE REPAIR WORKS

1206 Douglas Street

Omaha 2, Nebraska

vertising only to the residents of one small community, you obviously need less money to reach them with the same number of selling messages than you'd require to sell the whole of a big city, or a region. The geographical extent of the territory is a factor in deciding how much money you should spend for advertising.

6. Is the company a relatively new one? Am I trying to reach a totally new group of customers and prospects? A new firm must be promoted more strongly during its early days than an established one. It needs more advertising to acquaint the customers with its existence.

For the same reason, an effort to reach a wider group of new customers calls for greater advertising expenditures than is necessary if you are advertising to people who know you. A heating company that has been in existence for some time, and has already built up a customer following needs less advertising than a new firm.

A rule found effective by many successful heating contractors is to spend double the normal amount when opening or reaching out for a new group of customers. Then the doubled advertising appropriation is gradually reduced to a normal appropriation.

7. What can past experience tell me? Examining the records and remembering the promotions that clicked and those that didn't, gives you a good insight into how much you need to spend. Your company's history tells a lot about the volume of advertising you should buy in the coming year. If you pick out the past promotions that were successful you can chart a good

Send for This Valuable Collection of Data

> "PANEL WARM AIR HEATING"

51 pages-81/2" x 11"-\$1.00

Made of numerous papers published originally in "American Artisan," this booklet includes a simple, down-to-earth explanation of panel heating. What this method of heating can and cannot do in providing indoor comfort is unmistakably pointed out. It describes various types of installations, and explains why some operate satisfactorily and others do not. Many practical suggestions on correct design procedure are also given.

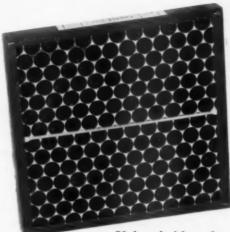
To obtain a copy, send \$1.00 today to the address below.

KEENEY PUBLISHING COMPANY

6 N. Michigan Avenue

Chicago 2, III.

AIR FILTER features



NEW AIDS TO AIR CON-TROL

 Unbreakable plastic filament · Less "handling" hazard · Natural impinging qualities • Greater dust holding property • Metal screen center sandwich pad • Plastic filaments are non-combustible. Write for details today.



MASTER PRODUCTS CO.

7000 So. Wentworth Ave.

Chicago, III.

This is NO GADGET It's your right arm, if you do DUCT WORK!



No. 18 SMITH'S CLEAT BENDER

\$6600

F.O.B. Factory

\$42.00 F.O.B. Factory

- V Bends uniform cleat edges in less than 5 seconds! Other methods take as much as a minute or more.
- V Makes perfect drive cleats in less than 8 seconds! Free of ripples and ready to use without the aid of a screwdriver.

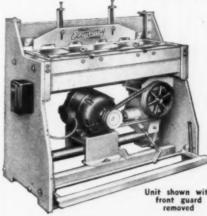
No hammer & dolly . . . no tongs . . . no snap-on pliers . . . nor any slotted piece of metal could ever compete with the efficiency of this bender . . . over 3000 Smith's Cleat Benders are proving this every day.

You can save as much as two-thirds of your forming time on a length of square pipe . . . Some users have reported saving the price of bender on the first job.

For the last word on the performance of these benders see any authorized jobber or tool supplier.

R. E. SMITH, 1513 Monroe St., Waukegan, III.

The PLASTI-STATIC now Economy P-16 MOTOR **OPERATED SHEAR**



- . POSITIVE ACTION
- . NEW DIRECT DRIVE
- . ALL STEEL CONSTRUCTION
- . MOVING PARTS ALL ENCLOSED
- 16 GAGE CAPACITY

A new type direct worm gear drive built into the Economy P-16 provides positive shearing action in any metal to capacity—more efficient, smoother cutting and positive control of the knife bas are possible. Minimum of moving parts, elimination of heavy fly wheels, brakes, etc., assures longer life and maximum service. All steel, properly braced construction means great strength and rigidity under most severe operating conditions.

Write for illustrated circular and prices. We are exclusive Distributors of Economy Shears and Brakes.



ACME EQUIPMENT CO., Inc. Chicago 6, Illinois 126-28 S. Clinton St.

Write for FREE

Illustrated WAR SURPLUS Circular

NEED

REPAIR PARTS*

IN A HURRY?

Jru

NORTHWESTERN

All makes of Stove Furnace and Boiler Repair Parts

Northwestern STOVE REPAIR CO.

662 West Roosevelt Road

Chicago 7, Illinois



ON THE SQUARE

We specialize in rolling to your specific requirements angles, channels, tees, bars and special shapes.

Our skilled and experienced workmen have the knack of turning out rings with perfect curvature—furnished with or without bolt holes.

Write today for standard sizes and discounts

National Metal Fabricators

2140 So. Sawyer Avenue

Chicago 23, Illinois

blueprint for future advertising so that the money you spend can all be spent effectively.

Speaking in terms of advertising, there are three sorts of heating companies. First is the company owned by an advertising-wise man who stubbornly allocates a certain percentage of volume to advertising, come hard times or boom. He is the heating contractor whose firm usually shows a steady growth in volume and in year-end profits.

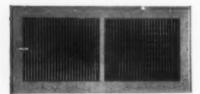
Second, there is the heating company that runs an ad when the mood strikes the owner, who often scoffs at the idea of advertising steadily throughout the year. He is usually the marginal operator who makes money, but never a great deal of it.

Third, there is the don't-believe-in-advertising heating contractor. A few firms have grown great without advertising, but only a very few. These heating contractors come and go with the years. They seldom last long, and practically never grow, if they do manage to hang on.

To prove the importance of allocating a definite percentage of the sales volume to advertising, one heating contractor quotes the often-repeated Parable of the Hot Dog Man:

"Once, there was a Hot Dog Man who kept a stand beside a busy highway. He set up signs along the highway advising motorists to try his super special hot dogs. And they did. The Hot Dog Man sold so many hot dogs that he was able to bank a little money and to send his son through college.

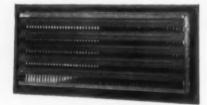
"Then the son graduated and came back to help his



FRONT

No. 30 Vertical Fin Multiple Louver

REAR VIEW



IMPROVE THE

APPEARANCE AND PERFORMANCE
OF YOUR INSTALLATIONS . . .

USE MIDCO'S NEW NO. 30

FOUR WAY DEFLECTION REGISTERS

MIDCO REGISTER CORPORATION

1059 GRAND AVENUE, ST. PAUL 5, MINN.



A LOW COST FACTORY-ASSEMBLED UNIT

For Small or Medium Homes

Completely assembled, wired and adjusted. Available for coal, gas or oil fired. Territories still open. Write or wire today for details.

The FIREWEL Co., Inc. 1042 Clinton St., Buffalo 6, N. Y.

For Greater Permanence

IRONSET

Asbestos Furnace Cement



Ironset is a high-quality cement used for setting up new furnaces or re-cementing old ones. Because it withstands higher tempera-

tures without shrinking, bloating or blistering, Ironset makes your work more permanent. Easy to use, Ironset hardens quickly and adheres firmly to the metal, providing a perfect, gas-tight seal. Try it on your next job and see how it makes the job stay put. Packed in 5 lb. and 10 lb. cans.

STOCKED BY LEADING JOBBERS EVERYWHERE

Fireline Stove & Furnace Lining Co.

1816 Kingsbury St., (Dept. G), Chicago 14, III.

SODER ALUMINUM STRONG JOINTS

Samples Free



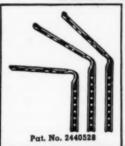


BRAZING & WELDING

L. B. ALLEN CO. INC. Chicago 31, Ill.

6702 BRYN MAWR AVENUE, CHICAGO 31, ILL.

IMPROVED!



No. 12 SHANK

331/3% STRONGER

IMPROVEMENT IS APPLIED TO No. 15—SQUARE, No. 18—14 PITCH, AND No. 25—14 PITCH.

> SOLD THRU LEADING IOBBERS EYERYWHERE

BERGER BROS. CO.

Main Office & Factory 229-237 Arch St., Philadelphia, Pa.

REPAIR PARTS for all FURNACES **BOILERS, STOVES • Guaranteed to FIT**

A. G. BRAUER Supply Co.

2100 Washington Ave.

St. Louis, Mo.

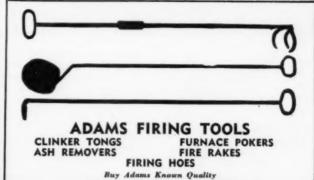


The Demuth Patented "draftless" Air Distributor, the only diffuser with the Patented Air equalizing vanes within the

device. Positive diffusion and aspiration over the 360 degrees of the outlet. Used by discriminating users throughout the country. Available in Aluminum, Steel and other metals to order.

Write for complete information

CHARLES DEMUTH & SONS, INC., Mfgs. Mineola, N. Y. Est. 1905



THE ADAMS COMPANY

BRIDGE STREET

DUBUQUE, IOWA



New and Improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all

standard a returnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems, Send for Bulletin' No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street

Milwaukee, Wis.



Chicago Steel Bending Brake



DREIS & KRUMP MANUFACTURING CO. CHICAGO 36, ILL. 7404 LOOMIS BLVD.

A Type and Size for Every Need



For efficiently controlling light and medium dampers in heating, ventilating and air conditioning systems, specify Parker-Kalon Damper Controls. The line includes all types and sizes, at a range of prices to fit the needs of any job. Parker-Kalon Corp., 200 Varick Street, New York.

PARKER-KALON damper controls

ORNAMENTS



STAMPINGS & SPINNINGS

Zinc Ornaments Available From Stock. Copper, brass, bronze, aluminum and stainless steel ornaments made up promptly.

If you don't have catalog K, send for it NOW.

MILLER & DOING 45 YORK STREET

BROOKLYN, N. Y.

More Jobs...

When you use

More Profits | FIRELINE

Stove and Furnace Lining

It's easy to repair cracked and burned out firepots the Fireline way. High-quality industrial refractory adapted for domestic use, Fireline comes in moist, plastic form that is easily installed through the furnace door; just pound Fireline into place with a hammer, then trim it smooth. When baked out by the fire, it withstands temperatures up to 3000 dog. F. Seals all cracks and holes.

Packed in 50 lb. and 100 lb. drums; in 5 lb. and 10 lb. cans. Also used for replacing fire tile in steel furnaces, for setting stokers, and oil burner combustion chambers.

Stocked by leading jobbers everywhere. Write for literature, prices and discounts.

FIRELINE STOVE & FURNACE LINING CO.

1816 Kingsbury St., (Dept. G), Chicago 14, Ill.

HEAT THAT COLD ROOM

This self-cooled booster fan will de the job better because it's ventila-ted. Oil only twice a year without removing the fan from warm air pipe. Long lasting, quiet, efficient, runs on house current, weighs only 1½ lbs. Fits pipe sizes from 8" to 12", very simple to install, Can be operated with switch, automatic fan operated with switch, automatic ran control or thermostat. Thousands now in use. Ask your jobber today or write us for prices. Insist on Mc-Larty, the only ventilated booster fan on the market.



MCLARTY VENTILATED BOOSTER FAN

McLARTY SYSTEMS

201 W. Mich. Ave. Battle Creek, Mich. father. 'See here, Dad,' said the son, 'You are a fool to stock up so heavily on hot dogs. Don't you know that economists say times are tough; do you want to be caught with too much inventory?' So the Hot Dog Man ordered less from his suppliers. Then there was an accident on the highway, and the Hot Dog Man's signs were knocked down. The son protested when his father planned to buy new signs: 'See here, Dad,' he said. 'Economists say there's a big bust-up around the corner. You'd be foolish to spend so much money on advertising now.'

"So the Hot Dog Man cancelled his order for the new signs. Soon, motorists forgot about his stand because there was no steady advertising to remind them. Things became very tough indeed and, as the son had predicted, hard times hit the highway hot dog business."

To guard against suffering the fate of the Hot Dog Man, one heating contractor has hit upon a new idea in allocating advertising money. He spends a regular percentage of his volume for mass selling, as he always had done, but in addition he sets aside 1 per cent of the volume as a hard times advertising fund.

"If lean years do come," he explains, "then I'll need advertising most of all. But I won't have the money to spend on advertising if my sales shrink, because there is a point beyond which I can't continue spending. So I'm accumulating a fund now. If I ever desperately need advertising money that my regular volume does not permit, I'll have it."



"CRARYS" RAIN WATER CUT OFFS

Made in all Standard Conductor Pipe Sizes. Plain Round and Corrugated Round.

Write for Prices and Name of your nearest Jobber.

GALVAN MANUFACTURING CO. New Albany, Indiana

INDUSTRY'S VENTILATING SOLVED! PROBLEMS

No belts to slip. Direct connected. Sets up on the roof out of the way of everything.



A compact, selfcontained unit easily and cheaply installed. Write for details now. Dept. 9.

THE GALLAHER CO.

Owatonna, Minn.

THERE'S MONEY for YOU in the Basement with the TORNADO®

Furnace and Boiler Cleaner
QUICK - THOROUGH — Extra
strong suction draws out soot and
dirt in a steady stream into dusttight oversize bag. Attachments
supplied clean registers, radiators,
ate integer prices

air intakes, pipes, etc.

EXTRA PROFITS — Experience
proves that furnace and boiler
cleaning brings you the repair and

evice business.

WE HELP YOU SELL by suping proven sales helps for new lying proven sales helps for and repeat business. FREE TRIAL OFFER!

FREE THIAL OFFER!
Write today for details of our free
trial offer which lets you test the
TORNADO° Cleaner before pur-

Breuer Electric Mfg. Co. 5120 Ravenswood Avenue Chicago 40, Illinois



*Trade Mark Reg. U. S. Pat. Off

ALMAR EASY SLITTER

FOR USE WITH BRAKE OR BENCH

Speed up your work-without an 8' or 10' Square Shear The Rotary action of cutters produces a neat,





PRICE-COMPLETE Almar Easy Slitter

with cutting head & track

Brake Type — \$80,0

Bench Type — \$75.0

Brake Type — \$85.0

Bench Type — \$85.0

F.O.B.—Chicago, Ill.

WARD MACHINERY COMPANY

CHICAGO 6, ILLINOIS 564 W. WASHINGTON BLVD.

Chisels, punches, drills, screw drivers, nippers and numerous other hand tools ... quality built for leading jobbers.



long services Sold by DAMASCUS STEEL PRODUCTS CORP. ROCKFORD, ILLINOIS

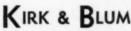
Vernois original

Many homes all over the country are being heated by Vernois Furnaces. Sooner or later repairs will be necessary for the older ones, and when they are don't take chances with inferior materials . . . be sure the first time . . . install Vernois Original Parts.

MT. VERNON FURNACE & MFG. CO. MT. VERNON, ILLINOIS

BLOW-PIPE PARTS

One-piece pressed Elbows, from 3-inch to 14-inch di-ameter, of 22- to 18-gauge metal, also Blast Gates, Cut-offs. Ball Joints, Ad-justable Hoods, Rolled and Pressed Steel Rings and other Blow-Pipe Parts made at low cost by production methods. Write for literature and



2880 SPRING GROVE AVE.



CINCINNATI 25, OHIO

SLIP ROLL MILTON FORMING MACHINES Specialist New & Used Sheet Metal Machinery

SIZES 1" to 6" Dia. Rolls 16" to 10 Long

> ROLLS UP TO



MILTON EQUIPMENT CO.

402-08 RACE ST.

PHILADELPHIA 6, PENNA.

MANUFACTURERS OF

FURNACE PIPE AND FITTINGS



also conductor pipe, eaves trough, drip edge, rake strip, etc. THOR METAL PRODUCTS CO., INC.

Box 118 Eastwood Station

Syracuse, N. Y.

classifiedadvertising . .

Is the quick, economical way to find what you're looking for. Check the classified page each and every issue for real bargains and hard to find items. It's a quick and sensible means too, if disposing of sheet metal tools, furnaces, and anything else for which you no longer have use. Check the classified page for rates.

NOTCHING & NIBBLING

Most all kinds of notches can be cut with this snip. With a minimum amount of distortion, burring or bending of the blank. Con tours and curves can be nibble with this tool for a neat, clear job.

DOUBLE CUTTING

DOVETAILING

Quicker and Neater than Ever This snip makes both cuts and bends the lug on the same stroke, leaving the rest of the material straight, ready to enter character work. The lug is 5/32 inch wide and can be cut 14g inch deep.

TRI-SNIP

Manufactured by

ROTO-TABLE COMPANY 2605 E. THIRD ST., DAYTON 3, OHIO



PAT. APP. FOR

Write for Dealership & Prices CAPACITY 20 Ga. Mild Steel

CLIMATEMAKER Heat Loss SLIDE RULE Gives the RIGHT Answers QUICKLY to:

Pipe area, pipe and stack size for forced or gravity warm air heating.

E.D.R. of steam and hot water.

Blower size.

Easy to learn—Simple to use. Copyrighted in U.S.A. and Canada

and Canada. ORDER NOW-Write Dept. AA-7

Cosh With Order

The CLIMATEMAKER SLIDE RULE SERVICE 1404 E. Washington St. Bloomington, III.

CLASSIFIE Advertising.

Classified section: Rates for classified advertising are 8 cents for each word, including heading and address. One inch \$4.00. Count seven words for keyed address. Minimum \$2.00 for each insertion. Cash must accompany order.

situation open

WANTED: Two experienced Salesmen—One for the State of Penn. and one for the State of Ohio. Well represented with good sales background with the jobbers. Attractive high salary position with excellent opportunity for advancement with a manufacturer of Conductor Pipe, Eaves Trough, Furnace Pipe and Fittings, etc., whose merchandise is excellent in workmanship, appearance and efficiency. All correspondence held strictly confidential. Address Key \$770, American Artisan, 6 No. Michigan Ave., Chicago 2.

Wanted—Sales Engineer—One who is experienced in estimating, designing, selling and supervising installation of ventilating and air conditioning systems as well as all types of industrial and commercial sheet metal work. This position is with an old established sheet metal firm that wishes to expand and keep pace with our fast growing city of 25,000 population. An attractive salary and commission to the man who is qualified and who would like to live in the western part of the U. S. Address Key #769, American Artisan, 6 No. Michigan Ave., Chicago 2.

Wanted—by old established Heating and Cooling Co. an A-1 Salesman and Engineer. Man capable of engineering, selling and supervising heating or cooling installations. Position will be permanent and interest in the company made available later for right man if desired. Should be able to supervise cleaning campaign. Make written application stating qualifications, age, marital status, present employment and any information you think might be helpful to The Heat Engineering Co., 4475 Grand Avenue, Western Springs, Illinois.

wanted

WANTED—Shearings any amount—all sizes, Galvanized, cold and hot rolled aluminum. Stainless and copper 6" minimum width to 36" minimum length, uniform quantities. Gauges from 16 to 30 inclusive.

Los Angeles Sheet Metal Mig. Co. 901-903 East 9th Street Los Angeles 21, Calif. Trinity 4713

for sale

FOR SALE. Progressive Furnace Pipe and Fitting, and Sheet Metal building supply manufacturing business. Well equipped for low cost production. Located in fastest growing industrial area in United States. Centrally located on San Francisco Bay. Only 2 competitors within 400 miles. 4,000,000 population within immediate area. Trade area also includes customers in Arizona, Nevada, and Oregon. For sale as a going concern. \$125,000 will handle. Address Key #768, American Artisan, 6 No. Michigan Ave., Chicago 2.

FOR SALE—New #204 Chicago Steel #10 Ga. 10 foot Power Apron Brake complete with 5 H.P. 3 Phase Motor with all Control Features. Immediate Shipment from Chicago, Ill. State Best Offer. Address Key #771, American Artisan, 6 No. Michigan Ave., Chicago 2.

Special Offering New Ignition oil burner transformers 10,000 volt 110 volt 60 cycle standard mounting 3 to 6 at \$8.00 each 6 or more \$6.00 each 1 lb. cans No-Korode solder paste 75c per can six in carton. We also buy surplus stock of electric motors, etc. M. C. Solon, 613 Providence Bldg., Duluth 2, Minn.

situations open

WANTED—by large Sheet Metal Contract Shop in Southwest, a man for permanent position as shop foreman with past experience and thorough knowledge of sheet metal work and capable of efficiently handling men and meeting the public. Only those qualified in these requirements need apply. Address H. H. Bain Roofing Co., Inc., 815 Milam Street, Shreveport 6, Louisiana.

Salesmen to sell furnace fittings on commission basis. Complete line for forced air and gravity systems. Attractive territories open. Write giving experience and background. Address AJAX FURNACE FITTING CO., Div. of The Cincinnati Sheet Metal & Rig. Co., 216-220 E. Front Street, Cincinnati 2, Ohio.

situations open

SUCCESSFUL SALESMAN WANTED

Already recognized in the trade as the fastest growing manufacturer of fans blowers, and humidifiers in the heating industry, we intend to grow still more by giving our customers more service and more attention than ever before. To intensify our sales program, we need several really good salesmen.

Some-well-established territories are to be split.

Salary, expenses, and a very attractive bonus arrangement. There are also some areas open for commission representatives.

If you have proven sales talent, know the warm air heating trade in your territory, and are willing to work hard, for a nice income and unlimited future possibilities, write to us at once. Your communication will be kept confidential.

Frank P. Gibbons, Sales Mgr.

Viking Air Conditioning Corp. 500 Walworth Avenue Cleveland 2, Ohio



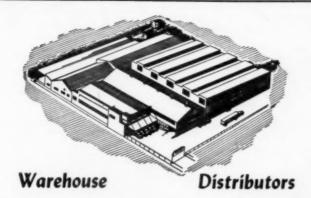
Invest in the future . . .

BUY A U. S. SAVINGS BOND TODAY!!



Service Section: Rates for display space in the Service Section are \$8.50 per inch per insertion. One-inch minimum space accepted.

SERVICE SECTION



METAL-WORKING EQUIPMENT

INCLUDING

LOCKFORMERS — CLEATFORMERS — EASY EDGERS CHICAGO—WHITNEY—CONNECTICUT BRAKES Full Line—PECK, STOW & WILCOX CO.

Electric Tools by Black & Decker and Skilsaw, Inc. Complete Line of Hand Tools for the Steel Fabricator

STEEL - ALUMINUM - COPPER SHEETS

POTTS-FARRINGTON

4250 WISSAHICKON AVE., PHILADELPHIA 29

HANDY TOOLS and EQUIPMENT

Available for Prompt Shipment

A DRIVE CLEAT NOTCHER

For notching drive cleats up to 3 in. in width, 22-ga. or lighter. Can be operated by hand or foot or can be easilv mounted on the bench or on the job with clamps or bolts and screws.



Distributed exclusively by

REINER & CAMPBELL CO., Inc.

671 Norwood Terrace, Elizabeth 2, N. J.

GRAND RAPIDS FURNACE CLEANERS

Write for Details DOYLE VACUUM CLEANER CO. 227 Stevens St., S.V. GrandRapide7, Mic



How to drill concrete



You can drill holes thru concrete walts, floors, ceilings, 12 to 15 times faster than by hand. Use the Wodack DO-ALL Electric Hammer. Typical examples drills a 36" hole 1" deep thru average concrete in less than 15 seconds? Saves time and money. You also use Wodack DO-ALL for channeling concrete, drilling wood, metal, etc. Investigate.

WRITE TODAY FOR BULLETIN 471-AA

Wodack Electric Tool Corporation 4627 W. Huron St., Chicago 44, III.

INVEST in the FUTURE

Buy U. S. Savings Bonds Regularly

SHEET METAL MACHINES & TOOLS

– LOCKFORMERS –

- AGE Soldering Torches Pots & Tanks
- Steel Hand Brakes . Press Brakes "Rex" Spot Welders "Pexto" Shears,
- Folders, Rolls, Rotary Machines, Etc.
- · Whitney Tools & Machinery
- Marshalltown Throatless Shears • Electric Shears, Drills • Shop Tools
- Smith Cleat Benders

Complete Line of Sheet Metal and **Ventilating Supplies**





WHEN IN CHICAGO VISIT OUR

INDEX TO ADVERTISERS

	T M-M-G	Para Ballan and Barrers Mar Garrer 146
A & A Register Co., The	Famco Machine CoFederated Metals Division	Penn Boiler and Burner Mfg. Corp 146 Penn Electric Switch Co 40
Acme Electric Welder Co 173	Field Control Div. H. D. Conkey & Co.	* Penn Ventilating Co
Acme Equipment Co., Inc.,	Fireline Stove & Furnace Lining Co 172 & 1	74 Perfection Stove Co
Adams Co., The	Fireline Stove & Furnace Lining Co. 172 & 1' Firewel Co., Inc., The 1' Follansbee Steel Corp. 1' Forest City Foundries Co., Inc.	72 Perfex Corp
Aerofin Corp 139	Forest City Foundries Co., Inc	Petersen Mfg. Co
Air Conditioning Products Co 154		Petroleum Heat and Power Co 112
Air Controls, Inc	G & S Machine Shop	* Pioneer Tool Co
Airtemp Div. of Chrysler corp 41	Galvan Mfg. Co 1'	74 Premier Furnace Co
Airtex Corp	General Blower Co	60 Quaker Mfg. Co
A-J Mfg. Co	General Filters, Inc	60 Quaker Mfg. Co* * Quiet Automatic Burner Corp
Ajax Furnace Fitting Co 161	General Oil Burner Corp 10	61 R C S Tool Sales Corp 124
Allen Co., Inc., L. B	Gerett Corp., M. A	Radiation Furnace Corp
Alton Mfg. Co	Gerhardt Co., Inc., George T	
American Brass Co49	Goergen-Mackwirth Co., Inc	Register & Grille Mfg. Co., Inc
American Machine Products	Great National Air Conditioning Corp 1	Reinhard Bros. Co 169
Sanitary Corp	Hall-Neal Furnace Co	Register & Griffe ang
Sanitary Corp	Harrington & King Perforating Co 1: Hart & Cooley Mfg. Co	Revere Copper & Brass, Inc99
American Zinc Institute* Anchor Div. Stratton-Terstegge Co 145	Heil Co	* Reynolds Metals Co
Anchor Mfg. Co	Henderson Furnace & Mfg. Co 13	ol Billian of Brillian Co
Anchor Post Products, Inc	Henry Furnace Co., The	21 Richmond Radiator Co
Anthracite Institute	Holcomb & Hoke Mfg. Co., Inc	Roto-Table Company
Armco Steel Corp 54	Holly Mfg. Co	Round Oak Co., Inc
Armstrong Co., The	Homer Furnace & Foundry Corp Hotstream Heater Co Hussey & Co., C. G	Ryerson & Son, Inc., Joseph T 60
Atlas Mfg. Co 155	Hussey & Co., C. G	* Sall Mountain Co *
Augr Pagister Co 50	Illinois Testing Laboratories, Inc 15	San Angelo Fdry. & Machine Co 162
Automatic Electric Mfg. Co	Independent Pneumatic Tool Co	Schaefer Brush Mig. Co
Automatic Firing Corp. 53 Automatic Humidifier Co. 53 Automatic Products Co. 17	Independent Register Co 13	34 Schwitzer-Cummins Co
Automatic Products Co	Inland Steel Products Co	Scully Signal Co
Bacharach Industrial Instrument Co 157	International Oil Burner Co	Security Mfg. Co
Barber Colman Co	Interstate Machinery Co	Skilsaw, Inc
Barber Gas Burner Co., The	Iron Fireman Mfg. Co	Skuttle Mfg Co
Bayley Blower Co	Johnson Co., S. T	* Smith, R. E
Berger Bros. Co	Johnson Co., S. T	Standard Electric Mig. Co., Inc., 167
Berger Mfg. Co., Div. of Republic Steel Corp	Jones & Brown, Inc	Standard Heating Equip. Co
Bethlehem Steel Co	Juniper Elbow Co., Inc	Standard Stamping & Perforating Co 162
Beverly Shear Co	Kaustine Co., Inc	Standard Electronic Mig. Co
Bishop & Babcock	Kent Company, Inc., The	69 Sterco Steel Co
Brauer Supply Mfg. Co., A. G. 173 Brenner Co., Jacob . 155	Kirk & Blum Mfg. Co	Stokol-Stoker Co., Inc
Brenner Co., Jacob	Krueger Sentry Gauge Co	
Breuer Electric Mfg. Co	Lau Blower Co	Sundstrand Machine Tool Co
Bryant Corp., C. L 148	Lexington Supply Co	Superior Products Co
Bryant Heater	Lockformer Co	7 Swartwout Co
Bunalo Forge Co	Lonergan Mfg. Co	Syncromatic Corp 5
Carnegie-Illinois Steel Corp19, 38 & 120	Made-Rite Furnace Pipe & Fitting Co 1	59 Tennessee Coal, Iron & R. R. Co 19, 38 & 120
Central-West Machinery Co., Inc 177 Century Engineering Corp 58	Maid-O'-Mist, Inc	That Matel Bred Co. 175
Cortified Furnace Co	Maplewood Machinery Co 16	
Char-Gale Mfg. Co	Marshalltown Mfg. Co	71 Tiernlund Mfg. Co
Chalses Fan & Rlower Co	Maurey Mfg. Co	Trade Winds Motor Fabs, Ibc
Chevrolet Motor Div., General	May-Fiebeger Co	
Motors Corp	McDonnell & Miller, Inc.	* Tuttle & Bailey, Inc
Cincinnati Elbow Co., The	McLarty Systems	**
Clarage Fan Co	Merchandising and Manufacturing Assoc., Inc	Union Mfg. Co
Clayton & Lambert Mfg. Co. 20 Cleveland Humidifier Co. 150 Climatemaker Slide Rule Service. 176	Mercoid Corp., The	Uno Ventilator Co
Climatemaker Slide Rule Service 176	Metromatic Mfg Co	U. S. Machine Corp
Cole-Sewell Engrg. Co	Meyer & Bro. Co., F	United States Register Co
Columbia Steel Co	Migco Register Corp	United States Steel Export Co
Comfort Equipment Corp	Milco Register Corp. 17 Miller & Doing. 17 Miller & Doing. 17	United States Steel Supply Co19, 38 & 120
Conco Engineering Works	Milton Equipment Co	Utility Appliance Corp37 & 39
Condensation Engineering Corp. 6 Conner Engr. Co., W. B. 141	Co	er Van Packer Corp 168
Corlett-Turner Co	Molloy Sales Corp	* Wiking Air Conditioning Corn 32
Coroaire Heater Corp	Morrison Products, Inc	Viking Manufacturing Corp., The
Cotta Transmission Corp	Mt. Vernon Furnace & Mfg. Co	75 Walker Mig. Co
Crescent Tool Co	Mueller Furnace Co., L. J	Washington Steel Corn
Dalata Markin Washin 100	National Air Conditioning, Inc	* Waterman-Waterbury Co
Dahlstrom Machine Works	National Engr. & Mfg. Co	
Delco Appliance Div., General Motors	National Heater Co	Western Engrg. Co
Corp 119	National Metal Fabricators	2 Westinghouse Electric Corp
Delco Products Div., General Motors Corp.	National Super Service Co	Wheeling Corrugating Co
Delta Manufacturing Div.,	Norman Products Co 14	Whiteley Bearing Corp
Rockwell Mfg. Co	Northwest Foundry & Furnace Co	Whitney Mfg. Co., W. A
Des Moines Stove Repair Co	Northwestern Stove Repair Co	Whitney Metal Tool Co
Detroit Air Filter Co		Eureka Williams Corp 51
Detroit Lubricator Co	Obdyke Inc., Benjamin P Ohio Valley Hardware & Roofing Co 12	Williams-Wallace Co
Dole Valve Co	Oil-Heat Institute of America, Inc.	* Wilson & Co., Inc
Doyle Vacuum Cleaner Co158 & 177	Olsen Mfg. Co., C. A	6 Wilson, Inc., Grant
Dravo Corp. 34 Dreis & Krumo Mfg. Co	Omaha Stove Repair Works. 17 Oran Company, Inc. 11	0 Wilson, K. R
Dresser Industries (See Bryant	Owens-Corning Fiberglas Corp	Wodack Electric Tool Co
Heater Co.)		Wolff & Co., Benjamin9
Elgo Shutter & Mfg. Co 166	Packard Elec. Div., General Motors Corp	Wysong & Miles Co 22
Flgo Shutter & Mfg. Co	Parker-Kalon Corn	XXth Century Htg. & Vent. Co
Fairbanks Morse & Co 114	Patten Co., J. V	Yaun Metal Products Co
Fallsington Mfg. Co	Peerless Foundry Co	61 Zink Co., John 140
Firms represented in this issue		page on which their advertising
The second of th	are recurred by the follo of the	page on which their davertising

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.

HU

type in

hum

73 BRAI

Honeywell Humidity Controllers are the Most Sensitive and the Most Accurate



known for the purpose, actuates Honeywell type, for control of relative humidity, is available in both line voltage and modulating models.

The mercury switch type controls either

humidifying or dehumidifying equipment. A mercury switch is actuated by the hair element which contracts or expands with every change in relative humidity.

Install a Honeywell product wherever humidity control is required-for every need from general purpose applications to the most exacting requirements. And always, you are backed by the Honeywell name. That means you benefit by proved performance, the Honeywell reputation for dependable, trouble-free service, and the broad background of Honeywell experience and technical assistance is available whenever needed. Get complete data about the leading line of humidity controllers by writing Minneapolis-Honeywell, Minneapolis 8, Minnesota. In Canada: Toronto 17, Ontario.

RP AIR FILTERS EVERYWHERE



Improve living, working, playing -with Scientific, Low-Cost Air Cleaning

Folks who use R-P Air Filters-home owners, factory engineers and maintenance men, building operators, heating experts-are regularly amazed at the large amount of dirt, soot, and other airborne debris an R-P Air Filter will catch and hold before changing or cleaning. To all of them-and to you-it means modern air cleaning with welcome minimum of attention and expense.

There are many reasons for this. An R-P Air Filter has actually far greater filtering surface. The slit and expanded filter media-of fiber or Alumaloyprovides thousands of flat, not thread-

like surfaces that hold more dirt. Multiple layers are so arranged that dirt-filled air is violently buffeted against these adhesive-coated surfaces throughout the filter. Surface clogging is practically eliminated because of the R-P "depth-filtration" design, so an R-P Air Filter will hold more dirt and still afford circulation of clean air.

Check-to your own profit, the savings in time and money, and improved air cleaning, that can be yours with R-P Filters! Call your local R-P Filter Dealer, or write for new Techni-Data Sheets.

RESEARCH PRODUCTS CORPORATION

Dept. A, Madison 10, Wisconsin

Canadian Representative-Delhi Industries, Delhi, Ontario

RP PRODUCTS INCLUDE:

- Fiber Self-Seal Air Filters
- ALUMALOY Self-Seal Air
- Cardboard Frame Replace. ment Filters
- ALUMALOY E Z Kleen Air
- ALUMALOY Industrial Washable Filters
- ALUMALOY Grease Filters "Snap-In" Grids for Filter Banks
- Self-Seal Replacement Pads Roll Filter Media
- Filter Bank Frames
- Special R-P Filter Coat

